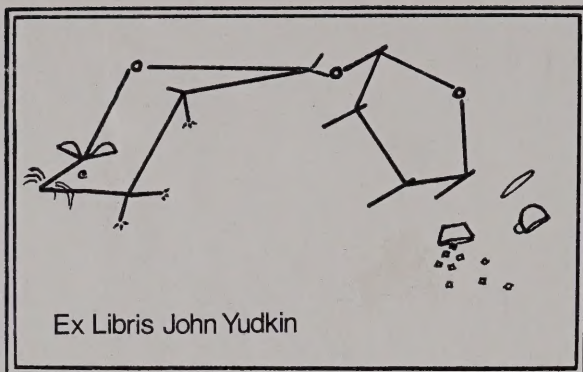
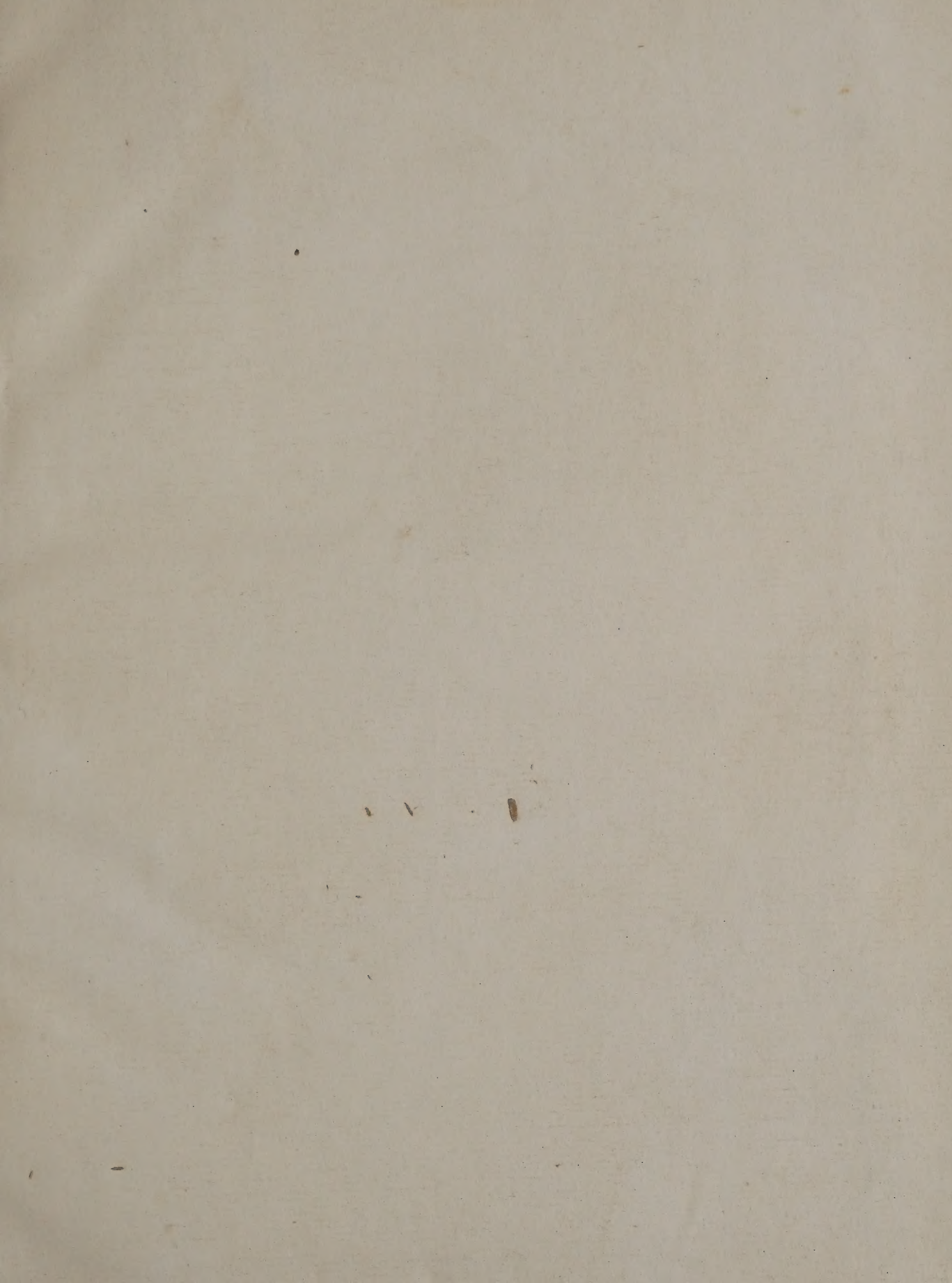


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THE
WORKS

OF THE LATE

WILLIAM STARK, M.D.

Soc. Reg. CONSISTING OF *Medica*
CLINICAL AND ANATOMICAL OBSERVATIONS,

Edin. WITH *ensis* —

EXPERIMENTS,
DIETETICAL AND STATICAL,

139-1

REVISED AND PUBLISHED FROM HIS ORIGINAL MSS.

BY

JAMES CARMICHAEL SMYTH, M.D. F.R.S.

PHYSICIAN EXTRAORDINARY TO HIS MAJESTY.

L O N D O N :

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M.DCC.LXXXVIII.



From the Editor.

The Hon. THOMAS FITZMAURICE.

S I R,

AS mankind are commonly desirous of knowing the persons to whom they are indebted, it is proper for me to inform them, that if any useful knowledge is contained in the following pages, they owe it chiefly to you. You distinguished, at an early period of life, the talents and abilities of the Author; you honoured him with your friendship, encouraged him by your protection, and your regard for his memory has preserved his works from oblivion, which, otherwise, would have perished with himself. You at first committed them to the care of a Gentleman very capable to have done them justice, had not bad health and a variety of avocations, prevented him. For myself, I can only say, that I have executed, with all the zeal and ardour of friendship, a task which I formerly undertook at the request of the Author, and to the performance of which I felt myself urged by those sentiments which are so happily expressed in the energetic
and

and manly language of the first of historians. “ Non hoc præcipuum
“ amicorum munus est, prosequi defunctum ignavo questu ; sed quæ
“ voluerit meminisse ; quæ mandaverit exsequi*.”

Permit me, Sir, to acknowledge likewise, the pleasure which this
occasion affords me, of publickly declaring the great regard and
esteem, with which I have the honour to be,

S I R,

Your most obedient,

And most humble servant,

JAMES CARMICHAEL SMYTH.

* Tacit. Annal. lib. ii. cap. lxxi.

PREFACE BY THE EDITOR.

ALTHOUGH the importance and scarcity of original Observations in Physic are well known, yet I am ready to confess, that neither the merits or originality of the present work, nor even my knowledge of the accuracy and candour of the Author, would have been sufficient inducements with me to become the Editor, had I not felt a strong desire to comply with the requisition of a friend, now no more, and a wish to preserve to his memory, the fame he so justly deserves, and which he so dearly earned. It is evident that I was influenced by no pecuniary motive, as any emolument arising from the sale of the book is destined to his family; and I could expect but little reputation from publishing the works of another, compared with the time and trouble which I must necessarily devote to it.

As Editor, my chief object has been perspicuity; and to effect this, I have taken considerable liberties both with the arrangement and language of the Author; adhering, however, with the most scrupulous exactness, to facts, and, wherever I could, retaining his own language, which, though sometimes obscure, is commonly expressive and manly. I am extremely sensible that this mixture
of

of composition must affect the unity and smoothness of the style, but, in works of science, it is clearness and precision, more than elegance, that is wanted.

The different parts into which the Clinical and Anatomical Observations are distributed, though equally correct, are by no means equally complete, or equally useful. It was, at first, my intention, to have endeavoured to supply what appeared to me defective, and to have subjoined a comment to each part, in the manner I formerly did to the one published in the Medical Communications, but I soon found that I had neither time or leisure, at present, for such an undertaking. I shall therefore only observe in general, that from the Clinical and Anatomical Observations of our Author, the young may receive much useful information, and that even the more experienced may find something to learn.

His Experiments on Diet are the first, and will probably long remain the only Experiments of the kind. It will possibly be objected to them, that they are not sufficiently numerous or varied to admit of any conclusions, but I would advise those who may start such objections, to reflect, that all inductions from experience, are, at best, only greater or less degrees of probability, and that if one Experiment did not afford some probability, twenty Experiments could not establish any. But Dr. Stark's Experiments will be looked upon by all true lovers of science, in a much higher point of view. They will be considered as the corner-stone of a great building, to be finished at some after-period of time, when men shall be found of equal fortitude, perseverance

PREFACE BY THE EDITOR. ix

severance and self-denial with our Author, actuated by a similar zeal for the promoting of useful knowledge.

Having said thus much of the Work, it may be expected that I should say something of the Author himself. This I do with a singular pleasure, as it is tracing back in my remembrance, the image of a friend I esteemed and valued, and to whom I am certain it would have afforded a singular satisfaction, had he known that I would have been the publisher of his works, and the historian of his life.

Dr. Stark's father, as I have been told, was a native of Ireland, his mother of Scotland, he himself was born at Birmingham. This might be considered as a whimsical anecdote only, and scarcely deserving notice, did we not every day see the characters and conduct of men influenced by such trifling and accidental circumstances, and therefore it may not be unreasonable to suppose, that even this had some effect in expanding the natural liberality of his mind, and freeing it from all those little local and confined prejudices, which too often disgrace characters otherwise respectable. But, wherever his cradle was rocked, he was educated at Glasgow, and there, under Drs. Adam Smith, Black, Reid, &c. he first learnt the rudiments of philosophy, and acquired that mathematical accuracy, that logical precision, and sceptic doubt, which distinguished his future life.

From Glasgow he repaired to Edinburgh, where he was soon distinguished, and honoured with the friendship of Dr. Cullen, who is not more eminently conspicuous for the superiority of his

x PREFACE BY THE EDITOR.

own genius, than quick-sighted in distinguishing, and liberal in encouraging it in others.

Having finished his studies at Edinburgh, he came to London in the year 1765, and now devoted himself entirely to the study of physic; and, looking upon anatomy as one of the principal pillars of the art, he endeavoured to complete with Dr. Hunter, what he had begun with Dr. Monro, and acquired, under this eminent professor, that perfect anatomical knowledge, which appears in all his dissections. He likewise entered himself a pupil at St. George's Hospital; and, disgusted, as he has often told me, with the inaccuracy or want of candour, of the generality of practical writers, he determined to obtain an acquaintance with diseases at a better school, and under an abler master; and to have, from his own experience, a standard, by which he might judge of the experience of others. With what industry he prosecuted this plan, and with what success his labours were crowned, we may form some judgment from the specimen now offered to the Public.

Whilst attending the hospital, he was also employed in making experiments on the blood, and other animal fluids; and likewise in a course of experiments on chemical pharmacy, which are still extant, and give the strongest evidence of his accuracy and diligence; but whether they are of importance enough to be presented to the public, I have not yet had leisure to ascertain.

In the year 1767, he graduated at Leyden, and published an Inaugural Dissertation on the Dysentery. On his return to London, he recommenced his studies at the hospital; and, in June, 1769, began
his

his Experiments on Diet, to which undertaking he was greatly encouraged by Sir John Pringle and Dr. Franklin, whose friendship he then enjoyed, and from whom he received many hints, both as to the plan, and, afterwards, in the execution of his design. These Experiments, or rather the imprudent zeal with which he prosecuted them, proved in the end fatal to himself; at least, such was the general opinion of his friends at the time, but, in my mind, and I speak from an intimate knowledge of his character, other causes, particularly chagrin and disappointment, had no small share in bringing about this event. Dr. Stark was much more conversant with books than with men; possessing great firmness and dignity of mind himself, with uncommon simplicity of manners, he was ill prepared for the cold prudence, the time-serving meanness, or the base duplicity which he met with in others. He had not yet learned in the great school of the world, a lesson which all young and ingenuous minds receive at first with indignation, *viz.* that genius or talents avail nothing, when opposed to interest or to faction. Nor had he yet made the observation of Figaro, equally applicable to all ages and to all countries,

Que, le savoir faire, vaut mieux que le savoir.

But if Dr. Stark may by some be reckoned unfortunate, in having been cut off at an early period of life, and before he had obtained that eminence and distinction to which his talents and application entitled him, he was peculiarly fortunate in what is infinitely more valuable. If his life was short, it had, at least, been spent in the most agreeable, as well as most useful of all pursuits, the pursuit of knowledge. If he did not accumulate wealth, he preserved his independence. If he did not obtain the vain praise of

the world, he had the suffrage of the wise and good, the praise that's worth ambition. He enjoyed the high satisfaction, *laudari a laudatis viris*, and a still higher satisfaction, in the consciousness of having always acted his part with integrity and honour; and, in his last moments, might have justly consoled himself with the magnanimous reflexion of the immortal Tycho, "*non inutilis vixi.*"

For those who wish to know his person, I shall transcribe the account he himself gives of it, at the beginning of his Experiments on Diet. "The person," says he, "upon whom these Experiments are tried, is a healthy man, about twenty-nine years of age, six feet high, stoutly made, but not corpulent, of a florid complexion, with red hair."

The character of his mind, which is infinitely more valuable, I shall not pretend to delineate; but those who were best acquainted with his merit, will not think that I apply improperly to him, what was formerly said by Sallust, of one of the greatest and best of the Roman citizens—"Non divitiis cum divite, neque factione cum factiono, sed cum strenuo virtute, cum modesto pudore, cum innocente abstinentia certabat; esse, quam videri, bonus malebat*"

* *Bel. Catalin. cap. liv.*

T A B L E
O F
C O N T E N T S.

CLINICAL and ANATOMICAL OBSERVATIONS.

P A R T I.

Diseases of the Stomach, Intestines, and Liver.

C H A P I.

Diseases of the Stomach illustrated by Dissection.

	Page
1. Cancer in the Stomach - - - -	I
2. Inflammation of the smaller Intestines, with Effusion of Blood	2
3. Blackness of the Cellular Substance, and Erosions of the internal and neighbouring Coats of the larger Intestines -	4
4. The glandular Follicles of the great Intestines much enlarged, and filled with a glutinous Substance - - -	5
	5 Stricture

	Page
5. <i>Stricture in the Rectum, and Erosion of the Glands of the Ileum</i> - - - - -	7
6. <i>Irruption into the Colon of Matter, collected near the right Hypochondrium</i> - - - - -	8
7. <i>Numerous Constrictions of the Intestines</i> - - - - -	9
8. <i>Hardness of the Liver, and Thinness of the Bile</i> - - - - -	10
9. <i>Abscess of the Liver</i> - - - - -	11
10. <i>Hydatides in the Liver</i> - - - - -	ibid.
11. <i>Whitish Granules, or Tubercles in the Liver</i> - - - - -	12
12. <i>The Common Gall-duct shut up by a Gall-stone, and the Hepatic-duct opening into the Duodenum</i> - - - - -	ibid.

C H A P. II.

A Description of the Symptoms of Diseases of the Stomach, &c. taken from those Cases where the Patients recovered, or where the Author had no Opportunity of examining the Bodies after Death.

1. <i>Vomiting</i> - - - - -	13
2. <i>Purging</i> - - - - -	14
3. <i>Costiveness</i> - - - - -	15
4. <i>Jaundice</i> - - - - -	16

C H A P. III.

Observations on the Effects of Remedies, given in the Cure of Diseases of the Stomach, &c.

17

PART

C O N T E N T S.

xv

P A R T II.

Diseases of the Chest.

C H A P. I.

Diseases of the Chest illustrated by Dissection.

	Page
1. <i>The Canal of the Aorta almost shut up by the semilunar Valves</i>	19
2. <i>Pericardium adhering to the Heart</i>	20
3. <i>The Pericardium enlarged, containing eight Ounces of a Fluid, and, by fatty Papillæ, adhering partially to the Heart</i>	21
4. <i>Ulceration of the Lungs, or Pulmonary Consumption</i>	22
<i>Symptoms of the Disease</i>	ibid.
<i>Appearances on Dissection</i>	25
<i>Tubercle</i>	26
<i>Vomica</i>	27
<i>State of the Air Vessels and Cellular Substance</i>	28
<i>State of the large Blood Vessels</i>	ibid.
<i>Trachea</i>	29
<i>The Degrees of morbid Affection</i>	ibid.
5. <i>An Aneurism of the Pulmonary Artery opening into a Vomica</i>	31
6. <i>The Vesicles of the Lungs filled with extravasated Blood</i>	32
7. <i>Lymph in the Thorax</i>	35
8. <i>Inflammation of the Pleura, and Effusion of Blood in the Intercoastal Muscles</i>	36
9. <i>Suppuration of the contiguous Surface of the Diaphragm and Liver</i>	37

CHAP.

C O N T E N T S.

C H A P. II.

A Description of the Symptoms of Diseases of the Chest, taken from those Cases where the Patients recovered, or where the Author had no Opportunity of examining the Bodies after Death

1.	<i>Of the different Kinds of Cough</i>	Page
	<i>Cough without Expectoration, or with Expectoration of Mucus only</i>	38
	<i>Cough, with Expectoration of thick Matter</i>	39
	<i>Cough, with Blood spit up in small Quantities</i>	40
	<i>Cough, with Blood flowing from the Mouth by Fits</i>	41
	<i>A remarkable Instance of Recovery from a violent Spitting of Blood</i>	42
2.	<i>Of difficult Breathing, or Asthma</i>	43
	<i>An Instance of difficult Breathing relieved upon soft Tumors appearing externally</i>	44
	<i>A Case of difficult Breathing immediately relieved, by the spontaneous Discharge of Matter from the Side</i>	45
3.	<i>Of Pains in the Side</i>	46

C H A P. III.

<i>Observations on the Effects of Remedies employed in the Cure of Diseases of the Chest</i>	47
--	----

P A R T III.

Diseases of the Fluids.

C H A P.

C O N T E N T S.

xvii

C H A P. I.

	Page
<i>Diseases of the Fluids, illustrated by Dissection</i> -	49
1 <i>Extravasation of the Serum, or thinner Part of the Blood</i> -	ibid.
2 <i>Extravasation of the red Part of the Blood</i> - -	50
3 <i>Extravasation of coloured Serum, &c.</i> - -	52
4 <i>Putrefaction of the Fluids, &c.</i> - - -	53
5 <i>Extravasation and Putrefaction, united in the same Subject</i>	55

C H A P. II.

<i>A Description of the Symptoms of the Diseases of the Fluids, taken from those Cases where the Patients recovered, or where the Author had no Opportunity of examining the Bodies after Death</i> - - - - -		59
1 <i>Swelling of the Belly, with Fluctuation</i> - -		ibid.
2 <i>General external Swelling, retaining the Impression of the Finger</i>	60	
3 <i>General external Swelling, with Swelling of the Belly</i> -		ibid.
4 <i>A fluctuating Swelling on the Loins</i> - -	61	
5 <i>Fever, with red, or purple Spots on the Skin</i> - -	62	

C H A P. III.

<i>Observations on the Effects of Remedies given in the Cure of Diseases of the Fluids</i> - - - - -		
1 <i>A general Account of those Effects</i> - -	64	
2 <i>The</i>		2

- | | | |
|---|--|----|
| 2 | <i>The Effect of Mercury in an obstinate Swelling of the Limbs</i> | 64 |
| 3 | <i>The Effect of Barks in a copious Discharge of putrid Saliva</i> | 65 |

P A R T IV.

Diseases of the Head, Nerves and Muscles.

C H A P. I.

Diseases of the Head, &c. illustrated by Dissection.

- | | | | |
|---|---|---|----|
| 1 | <i>Lymph lodged between the Dura and Pia Mater</i> | - | 68 |
| 2 | <i>Suppuration of Part of the Dura Mater</i> | - | 70 |
| 3 | <i>The Veins of the Pia Mater apparently enlarged</i> | - | 72 |
| 4 | <i>No morbid Appearance in the Brain after an Apoplexy</i> | | 73 |
| 5 | <i>Deep red Blotches, and partial Suppuration in several Muscles of the Body, in consequence of a Wound</i> | - | 74 |

C H A P. II.

A Description of the Symptoms of Diseases of the Head, Nerves, and Muscles, taken from those Cases where the Patients recovered, or where the Author had no Opportunity of examining the Bodies after Death

- | | | | |
|---|---|---|----|
| 1 | <i>Loss of Feeling and of Motion</i> | - | 77 |
| 2 | <i>Loss of Motion, with Relaxation of the Parts</i> | - | 79 |
| 3 | <i>Loss</i> | | |

C O N T E N T S.

xix

	Page
3 <i>Loss of Motion, with Contraction of the Parts</i> - - -	80
4 <i>Perpetual involuntary Motion</i> - - -	82

C H A P. III.

<i>Observations on the Effects of Remedies in Diseases of the Head, &c.</i> - - - - -	84
---	----

EXPERIMENTS DIETETICAL AND STATICAL.

EXPERIMENTS ON DIET.

<i>Introduction</i> - - - - -	89
<i>Facts relative to Diet</i> - - - - -	92
<i>Observations on Digestion</i> - - - - -	94
<i>Abstract of a Journal kept during a Course of Experiments on Diet</i> - - - - -	96

E X P E R I M E N T I.

<i>Diet of Bread and Water</i> - - - - -	96
--	----

C O N T E N T S.

E X P E R I M E N T II.

<i>Diet of Bread and Water, with Sugar</i>	-	-	Page 100
--	---	---	-------------

E X P E R I M E N T III.

<i>Diet of Bread and Water, with Oil of Olives</i>	-	-	105
--	---	---	-----

E X P E R I M E N T IV.

<i>Diet of Bread and Water, with Milk</i>	-	-	109
---	---	---	-----

E X P E R I M E N T V.

<i>Diet of Bread and Water, with roasted Goose</i>	-	-	111
--	---	---	-----

E X P E R I M E N T VI.

<i>Diet of Bread and Water, with boiled Beef</i>	-	-	114
--	---	---	-----

E X P E R I M E N T II. REPEATED.

<i>Diet of Bread and Water, with Sugar</i>	-	-	115
--	---	---	-----

E X P E R I M E N T VI. REPEATED.

<i>Diet of Bread, with boiled Beef, and Water</i>	-	-	117
---	---	---	-----

E X P E R I M E N T

C O N T E N T S

xxi

E X P E R I M E N T VII.

	Page
<i>Diet of Bread, with only the lean Part of boiled Beef, and</i>	
Water - - - - -	118

E X P E R I M E N T VIII.

<i>Diet, stewed Lean of Beef with the Gravy, and Water</i>	121
--	-----

E X P E R I M E N T IX.

<i>Diet, stewed Lean of Beef, with the Gravy, Oil of Fat or</i>	
Suet, and Water - - - - -	122

E X P E R I M E N T X.

<i>Diet of Flour, Oil of Suet, Water, and Salt</i>	124
--	-----

E X P E R I M E N T XI.

<i>Diet of Flour, Water, and Salt</i>	127
---------------------------------------	-----

E X P E R I M E N T X. REPEATED.

<i>Diet of Flour, Beef Suet, Water, and Salt</i>	129
--	-----

E X P E R I M E N T XII.

<i>Diet of Flour, fresh Butter, Water, and Salt,</i>	130
--	-----

EXPERIMENT

C O N T E N T S.

E X P E R I M E N T XIII.

	Page
<i>Diet, Yolks of Eggs, Suet, Figs, and Water.</i>	131

E X P E R I M E N T XII. REPEATED.

<i>Diet of Flour, Butter, or Oil of Butter, Water, and Salt</i>	133
---	-----

E X P E R I M E N T XIV.

<i>Diet of Flour, Oil of Marrow, Water, and Salt.</i>	135
---	-----

E X P E R I M E N T XV.

<i>Diet irregular</i>	137
-----------------------	-----

E X P E R I M E N T XVI.

<i>Diet, Bread with roasted Fowl, Infusion of Tea, and Sugar</i>	139
--	-----

E X P E R I M E N T XVII.

<i>Diet, Bread, stewed Lean of Beef, with the Gravy, Infusion of Tea, with Sugar</i>	141
--	-----

E X P E R I M E N T XVIII.

<i>Diet, Bread, the Fat of stewed Beef with the Jelly, Water, and Salt</i>	144
--	-----

E X P E R I M E N T

C O N T E N T S.

xxiii

EXPERIMENT VII. REPEATED.

*Diet, Bread, the Lean of boiled Beef, Infusion of Tea, with
Sugar, but no Salt - - - - -* 147

EXPERIMENT XIX.

Diet, Bread, Fat of boiled Beef, Infusion of Tea, with Sugar 150

EXPERIMENT XX.

Diet, Bread, the Lean of roasted Veal, and Water - 153

EXPERIMENT XXI.

*Diet, Bread, Fat of Bacon-ham, Infusion of Tea, with
Sugar - - - - -* 155

EXPERIMENT XXII.

*Diet, Bread, Lean of Bacon-ham, Infusion of Tea, with
Sugar - - - - -* 157

EXPERIMENT XXIII.

*Diet, Bread, or Flour, with Honey, and Infusion of Tea,
or of Rosemary - - - - -* 159

EXPERIMENT XXIV.

Diet, Bread, with Cheshire Cheese, and Infusion of Rosemary 165

STATICAL

S T A T I C A L E X P E R I M E N T S.

<i>Statical Experiments, or Observations made on the Weight of the Body, with a View to determine how far it is affected, both in the Day and Night, by the Discharges of Perspiration and Urine</i>	- - -	169
<i>Statical Table</i>	- - -	171
<i>Account of Dr. Stark's last Illness and Death</i>	- -	183
<i>Mr. Hewson's Account of the Dissection of the Body</i>		185
<i>Mr. Hunter's Account from Memory, some Days afterwards</i>	- - -	189

L A C I N I C

CLINICAL AND ANATOMICAL

O B S E R V A T I O N S.

P R E F A C E

T O T H E

CLINICAL AND ANATOMICAL OBSERVATIONS.

IT is with the greatest diffidence that the Author of the following work, though encouraged by the advice of some very good judges, ventures to present it to the Publick, but he flatters himself, that in this enlightened age, when original observations on diseases are so much, and so justly sought after, it will be received, at least with indulgence, if not with approbation.

The materials were collected at a large hospital, where he had at all times access to the sick, and, consequently, the most favourable opportunity of observing the appearance and progress of diseases, and, when they proved fatal, of examining the bodies after death. He employed several years in these researches, deeming it an indispensable duty to write a faithful history of each disease, from the report of the patient, and never deviating from this rule, but where the sick were incapable of giving a satis-

factory account of their complaints; then, and then only, he had recourse to the relation of friends, or of those who were present. His remarks are the result of observation and inspection, unbiassed by any hypothesis or system. He has made but little use of the terms of art, from an opinion that they are not always very correctly applied, and being desirous of avoiding all vain parade of learning, or ground of cavil.

The parts into which this work are divided, are those into which the materials seemed naturally to break themselves, and the order is according to their degree of simplicity and certainty.

The first place is given to diseases of the alimentary canal; which, as most within our reach, are probably the best understood, and the most successfully treated.

Next to those of the alimentary canal, which converts our nourishment into chyle; are placed the diseases of the heart and lungs, which change the chyle into blood.

The third class comprehends the diseases of the blood itself, and of the fluids secreted from it.

The fourth class includes the diseases of the nervous system, by far the most difficult to be understood.

It was the Author's original intention to have added several other classes, particularly one giving an account of common fevers, another on the diseases of the urinary organs, and a third on the distempers

distempers peculiar to women, but finding it a more difficult and tedious labour than he at first apprehended, to abridge diaries of single cases, and to place those which are similar, in the same point of view; he is obliged to defer the execution of this part of his plan to some future opportunity.

The first chapter contains an account of those diseases which proved fatal, with the morbid appearances upon dissection.

The second relates the history of symptoms only; for when the disease did not prove fatal, the morbid state of the parts could not be described: and, in the present imperfect state of the art, however discriminating symptoms may be, they can only lead to a probable conjecture of the condition of the diseased parts. It would be the perfection, indeed, of medical science, could we, from the symptoms alone, declare with certainty, the changes which have taken place in the body, and thus, in many disorders, have a truly rational foundation for practice. A frequent, careful, and impartial comparison of the symptoms which have preceded death, with the appearances of the dead body, can alone lead to this desirable perfection.

In the third chapter you have the supposed effects of medicines. But in this matter, which is of the utmost importance, we are liable to great deception, As symptoms, whether diseases be left to nature, or treated by art, are always changing, sometimes favourably, sometimes unfavourably, so that it requires great sagacity, diligent observation, and a thorough knowledge of diseases,
to

to distinguish between those changes which happen in the natural course of a distemper, and those which are the effects of remedies applied; yet, unless such distinction be made, our opinions with regard to the effects of remedies will be perpetually liable to uncertainty. There is, perhaps, no place so favourable for obtaining this knowledge as an hospital; here we see a number of sick, who, from their circumstances and situation, have not had it in their power to prevent their disorders from taking their natural course; here, therefore, it is, that the foundation must be laid of this most necessary and important distinction, whereby numberless mistakes to which this subject has always been liable, can alone be obviated.

The examples which I have given of diseases running on in their natural course, and terminating favourably, which I call a spontaneous cure, will not, I hope, be useless or uninstruc-

The delicacy which I am bound to observe, when describing the cases of patients who were under the care, or relating the effects of medicines prescribed by other physicians, obliges me to mention those medicines only which seemed successful. I am very sensible that silence, with respect to the unsuccessful cases, which should be fairly compared with the successful, being the proper method of conveying truth and conviction to the mind, is a very great defect, but it was here unavoidable. I have, however, endeavoured to supply this deficiency, by relating, and I believe impartially, the result of a comparison made by myself. But it will not, I hope, be thought, from my silence respecting several remedies whose effects appeared ambiguous, that I supposed them to be wholly inefficacious.

The

The chapters are subdivided into sections, which, in the first chapter, consist frequently of one or more cases, the dissections not having been sufficiently numerous to admit of the shorter, and more eligible method of composing from a number, one general history.

In the second chapter each article, or section, is an attempt towards a general history of the disease or symptom.

The third chapter is sometimes divided into sections, according to the particular remedies, whose effects are related.

The queries are those opinions or doubts, which a comparison of the symptoms that preceded, with the appearances after death, suggested to the author at the time; and were designed to direct the attention of the Reader, to the most important objects.

The difficulties which attend the execution of so extensive an undertaking, comprehending all the disorders which come under the care of a physician in a large hospital, will doubtless plead the Author's excuse with the candid, for the many imperfections of this first sketch, which, at least, has this merit, that it is faithfully copied from nature. Of its numberless defects no person can be more sensible than he is himself, but he thinks it better to submit it to its fate, rude and imperfect as it is, than to supply any thing from conjecture, that bane of physic and bar to all improvement. Upon the whole, he trusts, that this performance, however defective in itself, will answer one good purpose, by pointing out a large hospital as an inexhaustible source of the most useful medical knowledge.

CLINICAL

CLINICAL AND ANATOMICAL OBSERVATIONS.

PART I.

Diseases of the Stomach, Intestines, and Liver.

CHAP. I.

Diseases of the Stomach, &c. illustrated by Dissection.

§ 1. *Cancer in the Stomach.*

AMAN, aged forty-five, was seized with a pain about the region of the stomach, attended with purging. At first he voided slime, but afterwards white fibrous substances, in some measure resembling ascarides, together with thin membranes; he complained of want of appetite, low spirits, dimness of sight, and giddiness, which last was so considerable, that he was sometimes in danger of falling down: his pulse was weak and quick, and his strength much impaired, though he continued to walk about till the day of his death, which happened four months after the commencement of his illness. He had then two fainting fits, in the last of which he was carried to bed, and died quietly a few hours afterwards.

On opening the cavity of the abdomen, the stomach was found adhering above to the liver, and below to the pancreas. It was distended with putrid air, which burst forth on separating the adhesion at the liver. Great part of its upper side was consumed, and that portion of the liver in contact with the diseased part of the stomach, was ulcerated and covered with a putrid reddish matter. The lower part of the stomach adhering to the pancreas, had suffered in like manner. The parts by which it adhered, and some others, were thickened, soft, spongy, and in general rotten. It contained a large firm clot of blood, weighing almost a pound, together with some putrid matter. The pylorus was greatly thickened, but the passage was free. The duodenum and jejunum were of a dark bluish colour, but the extremities of the villi of the latter were quite black. The ileum, and large intestines, were, to all appearance, found.

Was it not surprizing that, in the preceding case, the patient never complained of sickness, nor was troubled with retchings? Perhaps the stomach was too weak for that exertion.

§ 2. *Inflammation of the smaller Intestines, with Effusion of Blood.*

A man aged thirty, unknowing of any cause, was, one evening, suddenly seized with retching and vomiting, which were frequent day and night ever after, and constantly and immediately followed the swallowing any thing, even in the smallest quantity. His skin became yellow on the fourth day, and what he vomited was observed on the eighth, to be of a coffee-colour. His stools were small, and of a natural appearance, and he had one every day till the tenth. A glyster being then administered, a purging with blood ensued. Some of the stools consisted of clots of blood, with hardly any mixture of
other

other substances: the skin and eyes were yellow; his breathing was oppressed; the expirations terminated in a slight groan, and were about twenty-five in a minute: his tongue, on both surfaces, was covered with a whitish slough; his pulse was quick and full; he had constant sickness, and vast uneasiness across the stomach and hypochondria; the fever encreased, the tongue and lips became hard and black, and, retaining his senses to the last, he died on the thirteenth day.

On examining the body, the stomach and large intestines were, externally, of an ash-colour; the small intestines, in general, were of a blackish red; towards the lower extremity, of a deep red; and towards the upper extremity, of an olive, or greenish brown colour. A portion of the duodenum, a little below the ductus choledochus; also a portion of the fundus cæci, were of a very dark red colour, blood being effused between the peritoneal and muscular coats. Internally, The stomach, duodenum, and jejunum, were of a dirty brown, or blackish colour; the ileum was uniformly of a deep red, and, after being wiped, gave, when pressed, a reddish taint to a white cloth: the rugæ, and some other parts of the surface of the colon and rectum, were of a light red colour; the parts most affected did not, when pulled, appear to be at all weak or tender: the bile was almost black; the contents of the stomach, and duodenum, were a coffee-coloured fluid: those of the jejunum were a soft substance, like meconium: those of the ileum were a dark red substance: those of the colon were pure red; the colour of the liver, on its lower surface, was dark blue; internally, it was sound; the gall ducts were quite open: the other parts of the abdomen, and those of the chest, were in a sound state.

§ 3. *Blackness of the cellular Substance, and Erosions of the internal and neighbouring Coats of the larger Intestines.*

A man, aged fifty, was, when in the East-Indies, seized with a violent bloody flux, accompanied with excessive pains in the bowels, and almost constant straining. The flux, though less severe, continued almost constantly for four years afterwards, and he commonly voided very tough slime. After that period, it gradually diminished, and had entirely stopped about a month before his death; which, as will afterwards appear, (§ 9.) was probably owing to a large abscess in the liver.

A woman, aged thirty, after being wet, was seized with pains in her limbs and bowels, and, in a week afterwards, with so violent a purging, that there was sometimes not a minute, seldom more than ten minutes, and never, she said, above half an hour, between her stools: she did not void above a spoonful at a time; it was of a natural colour, but frothy and viscid: the pulse was very irregular; and the tongue covered with an olive-coloured fur. After a very considerable remission, the disorder returned with the utmost violence, and carried her off in about two months from its first attack.

In both cases, the cellular substance, between the internal and muscular coats of the large intestines, was black, but gave no tinge to water. The blackness was either in small circles, or in spots, or diffused over large portions of the cellular substance: in the middle of such spots as were larger and deeper-coloured than the rest, the internal coat
was

was broken by a very small erosion. We observed other erosions* a little larger, penetrating into that membrane; they appeared sometimes white, but most commonly black; others, still larger, and which were always white, ran into the muscular coat: in the parts most diseased, more than half the internal coat, great part of the cellular, the transverse and some of the longitudinal fibres of the muscular coat, were consumed;† externally on the peritoneal coat, faint brownish spots were seen opposite to the deep black internal spots; the small intestines were not to appearance diseased.

§ 4. *The glandular Follicles of the great Intestines much enlarged, and filled with a glutinous Substance.*

A woman, aged twenty-seven, was, after an irregular intermittent, seized with severe purging, accompanied with excruciating pains of the bowels. What she voided, was a thin olive-coloured fluid, with many small portions of a clear glutinous substance floating in it; they somewhat resembled drops of oil: her pulse beat commonly about 90 in a minute, and was small; her tongue was uncommonly dry. No considerable remission having happened, she died in about six weeks after the purging began.

A man, aged fifty-six, some months after a tedious fever, in which his strength had been greatly impaired, was seized with a purging, which, though sometimes violent, frequently remitted, but never wholly

* In the intestines of the man were observed the circles, spots, and smaller erosions: in those of the woman, besides these appearances, were observed the more advanced changes.

† See fig. 1.

wholly stopped. Pain of the bowels commonly preceded each fit of purging: what he voided, in the beginning, had been often mixed with blood, but afterwards it was mixed with small masses of a clear glutinous substance, coagulable by heat, or by alcohol, and sometimes it wholly consisted of that substance. Part of the food, especially liquids, passed through the body unaltered: his pulse beat about 90; his tongue was dry. The disorder was constant and violent for above a month before his death, which happened in eleven months after the purging began.

In the large intestines of both, portions of the internal coat were raised up into small hemispheres, containing a colourless glutinous substance, which was rendered white and firm by alcohol, or by heat, but by cold water was softened, and partly dissolved.* On the internal surface there also appeared irregular eminencies and depressions, both of which were covered by the internal coat: the former were white, both externally and internally; the latter externally were commonly livid, and sometimes they were in spots: under the eminencies the cellular substance was thicker and more solid; under the depressions it was thinner than in the sound portions of the intestines.† In the lowest part of the ileum, we observed eminencies of the same colour and structure as those in the colon.‖ There were also a few irregular erosions of the internal coat in the first case.‡ In the second, we observed erosions similar to those described under the next article. The other parts of the small intestines were in a sound state.

Were

* *Fig. 2, 3. b b, c, &c. d. iv. & v. a, &c. b.*

† *Fig. 3. a a.*

‖ *Fig. 5. A B.*

‡ *Fig. 3. e.*

Were the hemispheres, above described, the intestinal glands, enlarged? Was the coagulable part of the blood secreted by them, instead of common mucus? Is the voiding of a clear gelatinous substance, in small separate masses, the sign of this state of the intestines?

§ 5. *Stricture in the Rectum, and Erosion of the Glands of the Ileum.*

A man, aged forty-six, had almost recovered of a flux, which had continued about a year, accompanied with gripings, and after each motion, with blood dropping from him, when, twelve days before he died, the passage of his body was entirely shut up; the belly swelled, and for some time was partially pushed out by portions of the colon. Glysters and whatever he drank were immediately returned, the former with wind. There was much noise in the bowels. The belly becoming at last uniformly swelled, he died in the utmost agony.

The colon was every where distended, to almost five inches in diameter, by thin faeces and air, which last, through some small apertures in the coats of the intestine, had burst into the cavity of the abdomen. The stomach was compressed by a flexure of the colon, which almost entirely filled the left hypochondrium, and the distension of this intestine terminated at a stricture thereof, a little above the reflexion of the peritoneum over the bladder. At this stricture the passage was almost wholly shut up, by a kind of tubercles, soft, spongy, and rotten. We observed some erosions of the internal coat of the cœcum, and in the lower part of the ileum; also erosions
of

of what is commonly called Peyer's glands ; * and, near the attachment of the mesentery, we discovered small holes of the internal coat, † some of which might, by pressing upon the vessels near them, be filled with blood. The other parts of the alimentary canal were internally sound.

§ 6. *Irruption into the Colon of Matter collected near the right Hypochondrium.*

In a man aged thirty-four, during a bloody flux, accompanied with pain chiefly in the upper part of the belly, a hardness was felt, and soon afterwards a tumor appeared near the right hypochondrium. In about three months the flux stopt; but the tumor increased for two months longer, when it broke; and, the opening being enlarged with a knife, discharged about a pint of a thick reddish matter. At this time the purging returned, and in three weeks he voided matter resembling that discharged at the wound, where, while forcing at stool, there was often a bubbling noise. Lying on the left side was soon followed by a motion to stool, and pressure on that side of the belly forced the matter through the anus. The purging increasing, and the discharge, though small in quantity, continuing from the tumor (which had now almost quite subsided), he died in about seven months from the first attack of the purging, and two months after the breaking of the tumor.

The parietes of the abdomen, the edge of the right lobe of the liver, and the neighbouring part of the transverse arch of the colon, were found adhering to one another, and all of them in some degree ulcerated. The colon was at that part perforated by some
very

* Fig. 7.

† Fig. 8.

very small apertures ; and its internal coat, in many places, chiefly near the apertures, irregularly eroded.

§ 7. *Numerous Constrictions of the Intestines.*

A man, aged nineteen, by trade a brazier, having for nine months been often afflicted with pains, sense of twisting of the bowels, and costiveness, was seized a fortnight before his death with a violent fever, attended in the beginning with purging, and towards the end with stupor.

Another man, aged sixty-five, by trade a house-painter, was, for the last five years of his life, frequently afflicted with violent pains in his bowels, accompanied with costiveness : he was oft times nine or ten days without a stool. About a month before his death, being greatly weakened and wasted with his disorder, he was seized with a purging, which, though moderate, carried him off.

In both subjects, the small, as well as the large intestines, were found alternately contracted and dilated : the contracted parts in the former were about one quarter of an inch ; in the latter about half an inch in diameter ; they were both externally and internally of a deep red colour, seemingly from the enlargement of the blood vessels. The widest portions were nearly four times larger than the narrowest.

§ 8. *Hardness of the Liver, and thinness of the Bile.*

A man aged thirty, after a fever, became yellow, and continued so almost constantly for four years, his colour being sensibly deeper every time he caught cold; but except a slight looseness, to which he was now and then subject, he had no other remarkable complaint till three weeks before his death. He was then seized with thirst, fever, great pain in the upper part of his belly, and in both hypochondria; a frequent cough, his breathing short and painful, his skin and eyes of a deep yellow, his tongue clammy, the greater part of it very red, and one edge of it covered with a white slough; his belly was tense and swollen.

On dissection the liver appeared large, and of a dirty brown colour: it was hard and uneven on its surface, which was raised up into small eminencies in clusters. Externally, it was variegated, dark orange and dark green being mutually interposed. On pressing the gall bladder, a thin transparent bile, of a deep green colour, was forced into the duodenum; no stone, constriction, or other diseased appearance, was found in the gall-ducts or gall-bladder, though both were accurately examined. The omentum was thick and opaque, and turned upwards over the stomach and liver: over the stomach, it was attached to the diaphragm at its edge; over the liver, by a broad surface; but it did not adhere to either of those organs: the small intestines adhered by their convolutions to one another, and to the parietes, being covered with a kind of cellular substance. Internally, they were in a sound state.

§ 9. *Abscess*

lengthened, its lower surface being pushed out, formed, with the upper one, a continued convexity; and matter issued from some small apertures on its surface. Internally, there were two large cavities, containing about three quarts of a lightish brown thick fluid, and many round gelatinous transparent bags, white or yellow; the gall-bladder, at the bottom of which was a large opening, was included in the anterior of the two cavities; the gall-ducts were widened, and opened freely into this cavity and into the duodenum. The left lobe of the liver was nearly found. A part of the jejunum was reflected over the omentum and colon, adhering to the liver and to the parietes.

§ 11. *Whitish Granules, or Tubercles in the Liver.*

On examining the bodies of two persons, neither of whom had any symptom of an affection of the liver, both having laboured under complaints of the chest, and which, on dissection, appeared the chief seat of disease; the liver, though not considerably enlarged, throughout its whole extent contained small whitish granules, which were not vascular but smooth, almost transparent, and so numerous, that they occupied more than half the space naturally filled by this viscous. The gall bladder was very small, and contained little more than a tea-spoonful of bile.

§ 12. *The common Gall-duct shut up by a Gall-stone, and the Hepatic-duct opening into the Duodenum.*

In the body of a man who died of a fever, without having any symptom of jaundice, the extremity of the ductus choledochus was quite

quite shut up by a large gall-stone, which protruded into the duodenum ; the gall-bladder was greatly contracted, empty of gall, and covered all over with a cellular substance ; the ductus hepaticus adhered to the duodenum, and opened into it about an inch below the pylorus : over the gall-bladder, the edge of the liver was a little rounded. This viscus was in other respects found.

Was there a variety of structure

C H A P. II.

A Description of the Symptoms of Diseases of the Stomach, &c. taken from those Cases where the Patients recovered, or where the Author had no Opportunity of examining the Bodies after Death.

§ 1. Vomiting.

BLOOD is sometimes thrown up by vomiting, mixed with the food, or with the liquors of the stomach. The usual symptoms accompanying this, are, giddiness, pain of the head, and, in some instances, pain in the left hypochondrium, increased, after eating ; with exquisite soreness, when solid food, hot liquors, or hot medicines, are passing down into the stomach ; and, in other cases, weight at the scrobiculus cordis, sickness after eating, till the food is brought up ; dimness of sight, disagreeable dreams, and purging of black matter, or of blood. This disorder sometimes follows a blow or a sprain : most commonly the cause is unknown. In the first instance it terminated favourably.

§ 2. Purging.

§ 2. *Purging.*

Those cases of purging which I had an opportunity of observing at the hospital, were accompanied with thirst, want of appetite, foulness of the tongue, quickness of the pulse, gripings, noise in the bowels, straining, with pain in the fundament; and sometimes the food passed unaltered. They may, according to the matter voided, be divided into two species; the slimy, and the gelatinous: in both of which blood is frequently passed. In the slimy purging, the stools are frothy, and consist of a yellowish or whitish, viscid, ropy matter; which, unmixed, is sometimes, with the utmost straining, forced off scalding hot, and sometimes passes off almost involuntarily. This species is often accompanied with darkness before the eyes, giddiness, retching, vomiting. In the gelatinous purging, the stools are either a thin liquid, containing small, clear, whitish gelatinous substances, or almost wholly jelly; and sometimes nothing but wind is voided. In this species, any liquid taken into the body is apt immediately to run off with severe gripings. The duration of either species is, most commonly, a few weeks; sometimes two or three months: and, in one case, the slimy purging continued three years. The event is frequently fatal. The causes are uncertain.

Is it not probable that, in the first species, the bowels are in the state described (§. 3.); that, in the second, they are in the state described (§. 4.); and that, when blood is voided, which happens in either species, it proceeds from the erosion of blood-vessels, as described (§. 5.)?

§ 3. *Costiveness.*

§ 3. *Costiveness.*

The almost constant attendants on costiveness, are head-ach, sickness, vomiting. It is accompanied also with slight pricking, or severe and violent pains; either in the right side of the belly, near the scrobiculus cordis; in the left side of the belly, near the anus; or over the whole belly: these pains are oft times increased by slight pressure of the part. When the disorder is most violent, it sometimes has exacerbations, in which the bowels, after a sense of coldness in them, are, according to the feelings of the patient, twisted, drawn together, and squeezed to the back; the teeth gnash, the body is drawn forward; whatever is then taken is immediately vomited, and glysters administered are returned without faeces. As the stools are, for the most part, retained till the remedies given have proved effectual, the costiveness, in some violent cases, has continued a fortnight or a month; and one patient, a painter, had no stool for three months. In general, purging medicines, and glysters, when retained, produce very soon the desired effect. The duration of the disease is various and uncertain, but the most obstinate cases continue sometimes two or three years; intervals, which now and then happen after a spontaneous purging, being interposed. The cause, even when the disorder is most violent, is, at times, altogether unknown. Lead, in various forms, and the fumes of quicksilver, frequently occasion it in painters, and other workmen, who, in their several trades, make use of those metals. It sometimes follows a blow on the belly, or a sprain in lifting a great weight; and, in this case, blood, or matter, is voided with hardened faeces. It did not, in any of the instances from whence this history is drawn, prove fatal.

Are

Are the bowels, in such cases, sometimes inflamed? Were they, in the more violent cases, nearly in the state described (§. 7.)?

§ 4. *Jaundice.*

This disease begins with sickness and pain at the scrobiculus cordis, and sometimes with giddiness, retching, and vomiting of a yellow ropy phlegm. The urine is of a saffron colour, staining paper that is dipt in it, and becomes turbid when cold. The tunica sclerotica of the eye and skin are yellow; the yellowness is first perceptible at the pit of the stomach; external objects appear as usual. This disease is frequently accompanied with purging, though sometimes with costiveness: the stools are commonly in colour like blue clay; sometimes of a dark earthy, or of a deep yellow colour; but, so far as I have seen, never white. In general, there is a bad taste in the mouth, with a white tongue and a slight fever; frequently, immediately preceding the vomiting, there is a violent pain in the back; the pains in the belly are increased by walking; they complain of pain in the right, or left hypochondrium, or in the flank; and sometimes, though rarely, of pains shooting from the shoulder to the breast, or from the back down the thighs. In some cases, the disease intermits for several weeks or months, but more commonly is continued, though the pains and vomiting attack by fits, lasting either a few hours every morning, or for several days. Relief always follows spontaneous vomiting, or purging. When the disease is going off, there is sometimes a violent itching of the skin.

Does not the relief which follows spontaneous vomiting and purging, point out the proper method of curing this disorder, by emetics and purgatives?

C H A P. III.

Observations on the Effect of Remedies, given in the Cure of Diseases of the Stomach, &c.

OPIUM alone seldom failed to restrain purgings for two or three days or a week ; but the disease, at the end of those periods, returned, and commonly with more violence, than before opium had been taken. But, though this drug alone appeared to be a medicine altogether inadequate to the cure of purging, yet when combined with others, most excellent medicines were formed, whose effects were not less powerful, and were more lasting.

In the slimy purging, the most efficacious medicine was vitri antimonii cerati* gr. v. opii circiter gr. i. quotidie. Another powerful medicine was radicis columbæ gr. x. opii gr. i. in die. Columba root alone gave only a temporary relief. In the gelatinous purging the most efficacious medicine was ipec. gr. i. opii gr. i. quotidie. Vitri. antim. cerat. cum opio, given in this species, aggravated the symptoms. Other useful medicines, in either species, but of inferior efficacy, were opium with rhubarb, with aromatics, with absorbents, or the absorbents alone. When the pains were violent, fomentations gave much relief. In costiveness, the best remedies were fomentations and the common purgatives. In the painter's colick, oil, or oil with rhubarb, was most useful. In the jaundice, emetics and purgatives were useful remedies.

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Is

* A medicine in the Edinburgh Pharmacopœia.

Is not the combination of opium with other drugs, recommended to us by practitioners in all ages, and of all sects? Have we not an example of this in the antient compositions Mithridate, Theriaca, and several others, which are still retained in the modern dispensaries, and in which opium is a principal ingredient; also, in the highly celebrated medicines of Dover, and of Ward, the most efficacious of which are opium joined with ipecacuan, with hellebore, or with mercury.

PART II.

P A R T II.

Diseases of the Chest.

C H A P. I.

Diseases of the Chest, illustrated by Dissection.

§. I. *The Canal of the Aorta almost shut up by the semilunar Valves.*

A WOMAN, aged twenty-one, who got her bread by hard labour, had, for five years, been subject to fits of palpitation, which attacked her commonly after an interval of some months: the last fit, in which she died, lasted five weeks, being more violent and of longer continuance than any of the preceding ones. In this fit, the left hypochondrium and scrobiculus cordis were much pushed out at each palpitation; there was also a remarkable throbbing in the course of the vessels on each side of the neck, but from the irregularity of those motions, they could not be counted, and the parts themselves were so tender, that she would hardly allow them to be touched. Her pulse was weak, quick, and irregular, sometimes fluttering, sometimes intermitting: she complained of pain and tightness across the chest; her breathing was oppressed and quick, inspiring commonly forty-five times in a minute; she had a short cough, was low, faint, constantly sick, and, for most part, vomited immediately after swallowing the smallest quantity of any thing, whether liquid or solid. At first, she lay on her left side, or on her back; afterwards on her back only, having her head and

shoulders raised up, and at last with her arms folded over her head. She became anasarcaous a month, and yellow two or three days before her death.

On dissection, the lungs were found adhering to the pericardium, and to part of the parietes of the chest near it: in other places detached, every where soft, and, when pressed, froth issued out of the nostrils. The semilunar valves of the heart were thickened, and projected towards the axis of the aorta.* The heart was seemingly lengthened, in other respects found. The large blood-vessels, which were traced and cut up, as far as the head and arm-pits, were also found. The abdominal viscera were in a natural state.

§ 2. *Pericardium adhering to the Heart, &c.*

A woman, aged twenty-seven, was, some months before death, seized with a frequent dry cough, followed by pain in the left hypochondrium, and at the scrobiculus cordis: her breathing was short and quick, her pulse commonly one hundred in a minute; she complained of sickness, with constant and often violent head-ach. A fortnight before her death, she lost the use, first, of the left arm; then of all the left side, and her speech faltered.

The pericardium was found adhering every where to the heart, which was much enlarged, and hardened, but internally found; the lower, and greater part of the lungs of the left side, were of a dark red colour, firm, and adhered to the neighbouring parts; there was a very small quantity of water in the right cavity of the chest. The stomach

* Fig. 9, 10.

Stomach was narrow: the other abdominal viscera had a natural appearance.

§ 3. *The Pericardium enlarged, containing eight Ounces of a Fluid, and, by fatty Papillæ, adhering partially to the Heart.*

A girl, aged fourteen, was, three weeks before her death, seized with great difficulty of breathing, and with pain in the left side, attended sometimes with a short cough, which was not at all relieved by repeated venæsection. When in bed she lay constantly on the left side, her cough being excited by any attempt to lye on the right side, or on her back. She often chose to sit up; but whether sitting or lying, the body was always much bent forward. The pulse was full, and very quick.

The pericardium was much enlarged, and being covered towards the upper part with a soft substance half an inch thick, concealed all the lungs of the left side, except a small portion of the upper lobe near its edge. It contained eight ounces of a fluid: its internal surface, and also the external surface of the heart, was covered, in many places, with a layer of a kind of fatty matter, easily separable from either surface, and supporting numerous oblong fatty papillæ. The opposite papillæ on the pericardium, and on the heart, in some places, adhered to one another. The great vessels within the pericardium, were covered by a soft substance a quarter of an inch thick. The heart and great vessels, internally, were sound. The lungs adhered universally, though slightly; were in every part soft, and easily dilated by air blown in by the windpipe. There were some ounces of a fluid in
each

each cavity of the chest. The abdominal viscera, except the right kidney, were quite found.

On examining the body of another woman who died of a consumption, but who, a fortnight before her death, had lain also, night and day, bent forward on her elbows and knees, the pericardium contained much water.

§ 4. *Ulceration of the Lungs, or pulmonary Consumption.*

The frequency and fatality of this disorder having afforded me many opportunities of observing the symptoms, and of examining the state of the body after death, I shall here, instead of particular instances, endeavour to give a general description of the symptoms, and of the appearances on dissection, taken from ten cases, where the disease proved fatal.

Symptoms of the Disease.

The symptoms of the disease may be divided into primary and secondary; the former being such as are peculiar to affections of the chest, the latter, such as are common to those, and to some other affections.

Of the first kind are cough, spitting, pains of the chest, difficult breathing, and posture. Of the second kind may be reckoned coldness, heat, sweating, purging, wasting, pains of the limbs, &c.

The cough, which is brought on by exposure to cold, or by drinking any cold liquor whilst hot, or by various other causes, is almost

almost constantly the first symptom, and in the beginning often the only one; though it is, at times, accompanied with stitches, or shooting pains in the chest, and with expectoration. It generally attacks by fits, which are most frequent and severe towards evening, or during the night, preventing sleep.

The spitting or expectoration, is commonly very thick and viscid, of an ash-colour, with a slight tinge of green, and contains many air bubbles; sometimes it is yellowish, and in small round masses, which probably come from small vomicae; now-and-then, though rarely, it is streaked with blood. The quantity expectorated is generally inconsiderable in the beginning, but afterwards increases to about half a pint, or a pint, in twenty-four hours. In those cases, where (upon dissection) the large vomicae were found almost empty, the spitting, towards the end, had been in very small quantity.

As the spitting is, perhaps, the most certain criterion of vomica, it will be proper to enquire into its peculiar character, that it may be distinguished from pus and mucus: two substances which it greatly resembles. All of them, when free from air bubbles, sink in water. Pus is easily diffusible in it, by gentle agitation, but in a few hours falls to the bottom. Mucus cannot be equally diffused in water without strong agitation, but when diffused, forms with it a permanent ropy liquor. The spitting of consumptive persons is diffusible in water more easily than mucus, and like that, at first forms with it a permanent ropy liquor; but which, in a few days, deposits a sediment in the same manner as pus; the liquor, however, still continuing ropy, and resembling mucus and water.

The pains of the chest are of two sorts; viz. stitches, which sometimes come on in the beginning; or a general soreness
of

of the chest, which is most severely felt after violent fits of coughing.

The breathing (even before the disease has arrived at its acme) is generally two or three times more frequent than that of a person in health, and is often accompanied with a sighing noise, and performed with great motion of the chest; but it is somewhat relieved by the expectoration which follows the fits of coughing. Neither inspiration, nor expiration, can be continued so long as by a healthy person; but the former, in consequence of the pain or cough excited by it, is most sensibly shortened.

With respect to posture, the patient commonly lies on his right side; but this is not compleatly fixed till the disease is far advanced, when he can only lie on his back, with his head and shoulders high, and sometimes with his knees drawn up.

The coldness (which sometimes precedes any signs of an affection of the chest) comes on by fits, either regularly every day, or every other day, like the paroxysms of an intermittent fever; or, as is most common, at uncertain periods.

The heat is of two kinds, either a burning heat, with intense thirst, continuing all night, which succeeds the fits of coldness; or a continued heat, increasing towards evening, which, in general, is much more moderate.

The pulse is always small and quick; commonly there is a loss of appetite, though, in some instances, towards the end of the disorder, the appetite is voracious.

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The sweating is almost a constant symptom, and is at times profuse, breaking forth, chiefly, on the head and breast; though more commonly it is moderate, and follows the evening exacerbation; and sometimes towards the end, it diminishes, or ceases.

The purging seldom comes on till near the end of the disease, at which time the legs are apt to swell. When the purging begins all the feverish symptoms greatly abate, but are again increased, if, by any means, it is stopped.

The wasting of the body is more remarkable in this, than in any other disease.

Pains in the limbs, or all over the body, are also not unfrequent symptoms; and the menses, in women, (who are more liable to this disease than men) commonly cease soon after it is established.

The duration of the disease is various, from four months to two years; and it will be found to be nearly in proportion to the age of the patients, which varies from seventeen to thirty-five years.

Appearances on Dissection.

As the appearances on dissection, though extremely uniform, are very different in degree, it may be useful to arrange them under the following heads:—Tubercle; Vomica; State of the Air Vesicles, and cellular Substance; State of the large Blood Vessels; Trachea; the Degrees of morbid Affection; and some other circumstances.—

Tubercle.

In the cellular substance of the lungs are found roundish firm bodies, (named tubercles) of different sizes, from the smallest granule, to about half an inch in diameter; the latter often in clusters. The tubercles of a small size are always solid, even those of a larger are frequently so; they are of a whitish colour, and of a consistence approaching nearly to the hardness of cartilage; when cut through, the surface appears smooth, shining, and uniform. No vesicles, cells, or vessels are to be seen in them, even when examined with a microscope, after injecting the pulmonary artery and vein. On the cut surface of some tubercles were observed small holes, as if made by the pricking of a pin; in others were found one or more small cavities, containing a thick white fluid, like pus; at the bottom also of each of these cavities, when emptied, several small holes were frequently to be seen, from which, on pressing the tubercle, matter issued; but neither these holes, nor the others abovementioned, (so far at least as could be determined) communicated with any vessels. The cavities, in different tubercles, are of different sizes, from the smallest perceptible, to half an inch, or three quarters of an inch, in diameter; and, when cut through and emptied, have the appearance of small white cups, nothing remaining of the substance of the tubercle, except a thin covering or capsula. The cavities of less than half an inch diameter are always quite shut up; those which are a little larger have, as constantly, a round opening made by a branch of the trachea. At this period, there being a free passage for the matter contained in the tubercle into the trachea, and a communication between the cavity of it and the open air, it is proper to change the name of tubercle to that of vomica.

Vomica.

Vomica.

The smaller vomicæ are commonly entire, the larger are frequently ruptured; the largest (which, generally speaking, are of an oval shape, and about four inches in length) are lined, either partially, or entirely, with a smooth, thin, tender slough or membrane; the same as the capsula of the smaller vomicæ. The matter contained in them, when the capsula is entire, is whitish or yellowish; when ruptured, reddish; in either case readily diffusible in water. It is proper, however, to remark, that even in the largest vomicæ, when they are not compleatly ruptured, the matter is seldom red, but yellowish, ash-coloured, or greenish; often fœtid.

Into all vomicæ (the smallest perhaps excepted) there are several openings of the bronchia; also openings forming communications between the different vomicæ; the bronchial openings are commonly round and smooth; the others, generally irregular and ragged. The larger vomicæ, which have numerous bronchial openings, are found to contain scarcely more matter than is sufficient to besmear their surface; and what shews clearly that the matter of vomicæ is discharged by these openings of the aspera arteria, is, that if a deep incision be made into any diseased part of the lungs, and that part gently compressed, the matter will be seen to issue from the cut extremities of the bronchia; or if any considerable branch of the aspera arteria be laid open, and the lungs pressed in the same manner, the matter will be seen coming into it, from the smaller ramifications.

The largest vomicæ are generally situated towards the back part of either upper lobe, and are commonly concealed; though sometimes

on the surface of that part of the lungs, which is thin and sinks into a hollow, there are several small apertures leading to the vomica; and sometimes, though rarely, a vomica is a hemispherical cavity on the outward part of the lungs. Wherever there is a vomica there is always a broad and firm adhesion of that part of the lungs to the parietes, or pleura, so as to preclude all communication between the cavity of the vomica and that of the chest; even tubercles are seldom found without adhesion.

State of the Air Vesicles, and cellular Substance.

Those parts of the lungs which are contiguous to tubercles are red, sometimes soft, but more frequently firm or hard; and whilst other parts of the lungs unaffected by disease are readily distended, by blowing into the trachea, those portions which are contiguous to tubercles or vomicae, remain depressed and impervious to air, either blown into the lungs in this manner, or forced, by a blow-pipe, into incisions made on the surface. So that the function of the lungs, so far as respects the admission of air, seems, in those parts, entirely destroyed.

State of the large Blood Vessels.

The pulmonary arteries and veins, as they approach the larger vomicae are suddenly contracted; a blood vessel, which, at its beginning, measured nearly half an inch in circumference, sometimes (though it had sent off no considerable branch) could not be cut up farther than an inch; and when, outwardly, they are of a larger size, yet, internally, they have a very small canal, being almost filled up by a fibrous substance; and frequently, as they pass along the sides of vomicae, they are found quite detached, for about an inch of their course,

course, from the neighbouring parts. That the blood vessels are thus obstructed, and that they have little or no communication with the vomica, is rendered still more evident, by blowing into them, or injecting them; by blowing they are not sensibly distended, nor does the air pass into the vomica, excepting very rarely, and then only by some imperceptible holes; and, after injecting the lungs by the pulmonary artery and vein, the parts, less affected by disease, which before injection were the softest, become the hardest; and, *vice versa*, the most diseased parts, before injection the hardest, are now the softest. Upon cutting into the sounder parts, numberless ramuli may be seen, filled with the wax, but in the diseased parts there is no such appearance; and upon tracing, by dissection, the injected vessels, those which terminate in the sounder parts may be traced for a long way to the smaller ramuli, but those which lead to tubercles and vomica, a very short way, and only to their principal branches. The wax was very rarely found to have entered the middling sized vomica, and never the smaller or larger ones.

Trachea.

The branches of the trachea are never found in any degree contracted; the internal surface of those which opened into the large vomica, was of a deep red, (seemingly from the enlargement of vessels) and the internal surface of the trachea itself, was sometimes partially red.

The Degrees of morbid Affection.

The degrees of morbid affection are very different, in different subjects, and in different parts of the lungs of the same subject. In some
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cases there are no vomicae to be found above an inch in diameter; in others, several of two, three or four inches. In the former cases, the pulmonary arteries and veins are hardly sensibly contracted. Sometimes not above a third or fourth part of the lungs ~~are~~^{is} affected; at other times, the lungs, of one or both sides, are entirely diseased. From a rude calculation made on diseased lungs, the part which remained fit for the admission of air, may be estimated, at a medium, to be about one fourth of the whole substance of the lungs. When the lungs are only partially affected by disease, the diseased parts are always the higher, and rather the posterior; whilst the sound parts are the lower, and rather the anterior. When they are wholly diseased, the higher and posterior parts, are always much more so than the rest; and the lungs of the left side are more commonly affected than those of the right.

The lymphatic glands in the chest are frequently blackish, and sometimes contain a substance like moistened chalk. In the abdomen there is not any thing remarkable, excepting, sometimes, slight erosions of the villous coat of the intestines.

Is a constant cough, though unaccompanied with any other complaint, a symptom of tubercles in the lungs? Is it, when attended with fits of coldness, and with spitting, a certain sign of vomicae? Is not the spitting composed of matter from the vomicae, and of mucus from the membrane of the trachea? Does not the contracted state of the pulmonary vessels, and the thickening of their coats, prevent, in most cases, the fatal hæmorrhages, which otherwise would ensue? Is there not some reason to apprehend, that though a transitory relief is sometimes afforded by small bleedings, the progress of the disease is thereby quickened?

§ 5. *An Aneurism of the pulmonary Artery opening into a Vomica.*

A man, aged twenty-nine, who had led a very irregular and riotous life, was, for ten months before his death, subject to a slight cough, which came on immediately after his recovery from the measles. Notwithstanding his cough, he pursued his usual course of life; and, three weeks before his death, was taken ill in the night, with a violent bleeding at the mouth and nose, which continued about a quarter of an hour, and returned four times at different intervals. He was pale, weak, faint, low-spirited, and apprehensive of death, but breathed easily and coughed seldom. The night before his death he rested well, and rose in the morning without any particular complaint; but, having again laid down in bed, he was, when asleep, seized with a fit of coughing, and blood began to flow (interruptedly), but without any effort from his mouth, though, sometimes, it was brought up by a slight cough, or blown hastily from his nose. When the bleeding began, he immediately got up, and sat upon the bed, although he could not continue for a moment in the same posture, but was constantly either bending forwards, or reclining from side to side. At last, in a profuse sweat, he started upon his legs, and, with amazing quickness, threw off his waistcoat: the cough and bleeding immediately ceased; his pulse, which before had been very quick, was not now to be felt; his thighs trembled, his urine ran from him, and he sunk down into the arms of a person who was standing by, dying without a sigh or a groan, in about ten minutes from the time the hæmorrhage began: the quantity of blood which he lost, was about a quart.

In a branch of the left pulmonary artery, which passed along a vomica, in the upper and posterior part of the lungs of the left side, was an aneurismal sac, about an inch long, and one third of an inch broad : the coats of the sac resembled those of the artery, only thicker ; on one side of it was a slit, with coagulated blood adhering to it, both internally and externally ; within the sac, the coagulum was somewhat whitish : externally, it was divided into three branches, formed by three ramifications of the aspera arteria, that opened into the vomica ; the other ramifications of the aspera arteria, and even the trunk itself, being also filled with coagulated blood. There was no blood in the vesicles of the lungs, which were, every where, evidently distended with air, and the air, upon pressure, readily passed from one lobule to another, but could not be forced out at any branch of the trachea, except at the vomica above-mentioned. On opening the chest, the lungs did not subside ; they were of a light grey colour, with many small ash-coloured granules, but no adhesion of their surface, no other vomica, tubercle, or hardness, in any part of them. There was no blood in any of the cavities of the heart, excepting a few small clots between the carnae columnæ. In the large blood vessels, which issue immediately from the heart, there were some very small polypi. The subclavian vein was empty ; the abdominal viscera sound.

§ 6. *The Vesicles of the Lungs filled with extravasated Blood.*

Three middle-aged men were, all of them, seized, some months before they died, with pains in the chest, which, in two of them, were severe from the beginning : in the third, moderate till within three weeks of his death. They were accompanied with shivering and vomiting ; the shivering recurred at intervals, commonly every morning, and was followed by head-ach, heat, and profuse sweating ;
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the patients commonly lay, and with most ease, on the side principally affected, excepting in the night, when they were sometimes obliged to sit up. The breathing was about twice as quick as usual, and the expirations ended with a slight groan. The cough was very frequent, and in one case almost constant. The fever was high in all, and in two instances attended with delirium. The pulse, from ninety to one hundred and twenty in a minute, was full; and, at last, beat with a kind of vibration. Pure blood burst forth, or was brought up in considerable quantity by coughing: in one patient, about three weeks; in another, about one week; and in the third (who alone had been repeatedly bled in the beginning) only two days before his death. Two of those men, one of whom had lived rather fast, and was subject to a cough in winter, became anasarious some weeks before the fatal conclusion of their illness.

The air vesicles, in some parts of the lungs, were filled with blood, or with bloody serum: those parts did not collapse on opening the thorax; they were firm, and of a very dark, or of a light red colour; they could not be compressed, nor was it possible to distend them with air blown in from the windpipe, or at punctures made on the surface. In some instances, however, they did collapse, and admitted to a certain degree of compression or distention. The lungs themselves were surrounded by a bloody fluid, the quantity of which varied from a few ounces to several pints; they were frequently attached to the sides by membranous adhesions; when cut into, a thick blood, or bloody matter, issued forth at the cut surfaces; and slices cut off from the diseased parts, after having for some time been macerated in water, still sunk in it, in the same manner as before maceration. The inside of the trachea was pale red.

The parts of the lungs chiefly affected, in the preceding cases, were, in one case, the whole lungs of the left side, besides a large

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quantity

quantity of fluid in the cavity: in another, the posterior part of the upper and middle lobes of the left side; also the whole of the lower lobe of the right: in a third, the whole of the lungs in both sides were diseased, although those in the right were most considerably so; in this case only, the bloody matter, as mentioned above, issued at the incisions made in the lungs. There were no other præternatural appearances, excepting in one body, where the liver was hard and granulated.

To ascertain more accurately the state of the air and blood-vessels, the following trials were repeatedly made on two portions of the lungs taken from the same body; one of which was apparently sound, the other slightly diseased. On the cut surface of each portion, air was forced in by a blow-pipe; through the largest branch, we could find of the pulmonary artery, vein, and aspera arteria. Upon blowing into the branch of the pulmonary artery, in the diseased portion, the minuter ramuli were distended, and a little air bubbled out at some very minute openings on the cut surface. Upon blowing into the branch of the pulmonary vein, the air vesicles were distended, and air bubbled forth at the largest bronchial orifice; and, upon blowing into this last, the air vesicles were distended, and air escaped, with some blood, at the large venal branch. The same experiments being made on the sound portion of the lungs, the event was somewhat different; for, upon blowing into the arterial, or venal branch, the ramuli peculiar to each were alone distended, and a little air escaped at some minute openings on the cut surface. Upon blowing into the branch of the trachea, the air vesicles were distended, and no air escaped. The same experiment was also repeated on the sound lungs of another subject, and with the same effect.

§ 7. *Lymph in the Thorax.*

Three men, two of them middle-aged, the third sixty-five, were afflicted with a cough, attended with a frothy expectoration: two of them had this complaint for some months; the third, who had lived rather irregularly for some years before his death. They were out of breath upon walking only a few yards, and speaking was so troublesome to them, that they were unwilling to give any account of their feelings; their breathing was quick, and the expirations sometimes terminated in a slight groan; they could blow but feebly, and for a short time: they were, in general, desirous to sit up; and, when prevailed on to lie in bed, they were restless; or, if they continued for any time in one posture, it was lying on the back with the head high, or on the side in which (as afterwards appeared) the fluid was contained. The pulse was very quick and small; two of them had an inconsiderable swelling of the belly and ankles: and those two who had the lungs hardened, were hoarse; the other was not.

A yellowish transparent fluid was found in one or in both cavities of the chest; it coagulated by heat, though less firmly than the serum, having a larger proportion of water; the quantity of this fluid, in each cavity, was nearly a pint; the lungs were, more or less, diseased in all, with partial adhesions of the higher parts of them to the parietes: in one case, there were only some small tubercles in the higher part of the upper lobe; in the other two cases, the whole of the upper lobes, and part of the lower, were very hard, could not be distended by air, and when cut into, emitted a bloody froth. In one case, we observed on the surface of the lungs, small blisters,

containing a clear fluid. In two bodies, there was a small quantity of water in the abdomen; and, in one, the liver was granulated, the omentum in folds.

§ 8. *Inflammation of the Pleura, and Effusion of Blood in the intercostal Muscles.*

A woman, aged thirty, who for three months had been afflicted with severe purging, had also, soon after this complaint began, been taken with a cough, at first accompanied with spitting of blood, but afterwards of thick mucus and purulent matter. About a month before her death, when greatly weakened by these complaints, she was seized with violent pains, or stitches, in the left side, which almost entirely prevented her breathing: her pulse, as before, was quick, small, and weak: two blisters having been applied, the pains, in six days, abated, and afterwards were only felt on coughing; during the violence of the complaint, she lay on the side affected, but towards the end, her breathing being very short and difficult, especially in the night, she sat bolstered up in bed.

In the left side of the thorax, the lungs were of a very dark red colour, particularly at the upper part, where we found a vomica, and some tubercles: there were also some adhesions at this part, and at this part only; the pleura lining the ribs, was smooth, but its posterior part, particularly where contiguous to the intercostal muscles, was of a dark red; the redness penetrated the muscles, and, in some places, extended to the serratus major; it seemed partly owing to the enlargement of blood-vessels, but principally to an effusion of blood into the cellular substance, and which, by pressure, could be forced from one part to another. In the right side, the lungs, excepting

excepting a few tubercles in their upper part, were found, and free from adhesion, nor was there any redness of the pleura. In each cavity there was about a pint of yellow serum, though the quantity was greater in the right than in the left. The intestines adhered externally to one another, and there was a slight redness to be seen on some parts of their internal surface.

§ 9. *Suppuration of the contiguous Surfaces of the Diaphragm and Liver.*

A blacksmith, aged fifty, having, in the depth of winter, lain several nights in a cold house upon straw, was, two months before his death, seized with pains across the lower part of the chest, difficulty in breathing, and cough, but without spitting. The pains fixed in the right hypochondrium, and were, sometimes, felt at the scrobiculus cordis. In speaking, he could only whisper, but was not hoarse. The cough was performed with very little noise, and resembled more a lengthened-out expiration than common coughing. He could suck in air, or blow it through a quill a long time, and without pain: his pulse was low; he lay on either side, or on his back, and often with the body bent forward, his chin resting upon his breast. Sometimes he was obliged to sit up, especially a few days before his death, when he could not utter above two or three words without stopping, and said, he could hardly breathe, but had then no pain.

In the right hypochondrium, the greater part of the contiguous surfaces of the diaphragm and liver, were inflamed and covered with purulent matter; but the inflammation did not penetrate into the substance of either organ; there was no other preternatural appearance in the abdomen;

abdomen ; the lungs, and other parts of the chest, were accurately examined, and found to be in every respect sound, excepting a few slight adhesions in the right side.

C H A P. II.

A Description of the Symptoms of Diseases of the Chest: taken from those Cases where the Patients recovered, or where the Author had no Opportunity of examining the Bodies after Death.

§ I. *Of the different Kinds of Cough.*

Cough without Expectoration ; or with Expectoration of Mucus only.

THIS cough is commonly most severe at first going to bed, and is troublesome by fits during the night ; in some cases, however, (though rarely) it is worse in the day-time. It is accompanied with difficulty of breathing, sometimes with hoarseness, and often with pains in the chest ; but these are seldom observed till the cough has been of some standing. The fits of coughing frequently terminate with an expectoration of frothy mucus, which affords considerable relief. I have, however, known instances where that relief has taken place, several hours before the spitting began. But the most remarkable symptom attending this cough, and which indeed characterises it, is, the peculiar kind of fever. After one or two shivering fits, or after slight fits of coldness and of heat alternately, which come on in the morning, or a little after mid-day, (sometimes
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on alternate days only) the heat begins, and continues all the afternoon, and during the night, and then commonly terminates in profuse sweating. Sometimes there is no coldness nor shivering, but a continued heat, which increases after mid-day.

The pulse is always quick, generally about a hundred in a minute, with almost constant head-ach, incessant thirst, loss of appetite, frequent retching, and sometimes faintness. This cough frequently is occasioned by exposure to cold or moisture. Delicate young women, especially when incautious, in those particulars, about the menstrual period, are very liable to it. It sometimes terminates favourably, but oftener in *phthisis pulmonalis*; and may therefore be reckoned the first stage of this disease.

Cough, with Expectoration of thick Matter.

This cough attacks also by violent fits, commonly in the night, sometimes in the morning. The expectoration (which generally begins some weeks after the cough) is yellowish, or greenish, and is sometimes slightly streaked with blood. It is thick, viscid, and mixed with a little frothy mucus; at times foetid, and of a disagreeable putrid taste. Its quantity is often not less than two or three pints in twenty-four hours, but it diminishes towards the end of the disease.

The pains accompanying this cough are of two kinds; viz. acute pains in the sides, which frequently precede the first attack of the cough, and are often so violent as to stop it; or soreness, in the edges of the hypochondria, in the upper part of the recti abdominis muscles, or in the loins; which follows the fits of coughing.

In some cases there is no pain at any period ; frequently there is fever, though it is seldom preceded by coldness and shivering, nor is it, in general, so regular as that which accompanies the cough first described. Sometimes, in the last stage, there is no fever, the pulse being only sixty in a minute. At this period also, purging, dropical swelling, or profuse sweats take place ; though sometimes none of these symptoms occur during the whole course of the disease. As the cough abates, the fever, purging, and swelling abate also.

This cough is commonly produced by the same causes as the preceding, but sometimes the cause is unknown. It frequently proves fatal in a few months ; but sometimes the patient is, for a number of years, subject to fits of it, which continue for several months at a time, especially during the winter, and, in women, during pregnancy.

Cough, with Blood spit up in small Quantities.

This spitting of blood commonly happens only in the more severe fits of coughing ; it is preceded by violent pains of the chest, and accompanied with great difficulty of breathing, considerable fever, and sometimes shiverings. The pains of the chest are, at times, increased by pressure ; when these, and the spitting of blood, come on without any evident cause, they are often removed, in a week or two ; but when they attack after exposure to dampness or cold, they generally terminate in spitting of matter, and a fatal phthisis.

When these symptoms are occasioned by an external injury, the spitting of blood seldom continues above a week, and all the complaints cease in about a month ; unless when it terminates in dropsy, which

which is sometimes the case. As the spitting diminishes, it is more or less mixed with a yellowish matter, and at last becomes entirely purulent.

In some patients this complaint becomes habitual; continuing for many years, and attacking chiefly in the winter, or after any violent exertion.

Cough, with Blood flowing from the Mouth, by Fits.

Frothy blood is brought up by fits of coughing, which are, in some cases, extremely slight; in others, are violent, immediately before the blood begins to flow; the quantity brought up at once is about half a pint, or a pint: it is generally pure, but sometimes mixed with matter. The blood, in some cases, flows only twice or three times during the paroxysm; in others, much oftener. The approach of each fit is commonly known by the patient's expectorating more easily than usual; and when coming on, the blood is felt rising warm in the breast.

These paroxysms of hæmoptoe are sometimes preceded by a cough of several months continuance, accompanied by an expectoration of matter, or of blood in small quantity, or of a mixture of both; in other cases they supervene a hoarseness brought on by exposure to cold.

This kind of hæmoptoe is accompanied by slight pains of the chest, (chiefly about the scrobiculus cordis) with faintness, heaviness and drowsiness, which symptoms are greatly increased before each paroxysm, and are attended with considerable fever; the pulse being
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sometimes one hundred and thirty in a minute. Fits of coldness, and of sweating, with sickness, retching, and purging, are also not unfrequent symptoms of this complaint; which, for the most part, terminates fatally, though sometimes in recovery.

A remarkable Instance of Recovery from a violent spitting of Blood.

A man, aged twenty-eight, had, for about a week, complained of pain and swelling at the pit of the stomach, and under both hypochondria; the pain was greatly encreased by the slightest pressure, especially on the right side, by lying on the left, or by a full inspiration: it was accompanied with a trifling cough, but with a very high fever, the pulse being commonly about one hundred and thirty in a minute. In this state, he was seized with most violent fits of coughing, during which he sweated profusely, particularly on the upper parts of his body, and expectorated a considerable quantity of a thick, brownish, red, smooth, or frothy matter. The cough and spitting having been almost incessant for thirty hours (some hours in the night only excepted), the pain of the right side, and the difficulty of breathing, decreased; the swelling disappeared, the fever abated, and the pulse fell to one hundred and eight; but, in about twelve hours, all these symptoms, except the swelling, returned with violence, the fits of coughing lasting, with hardly any intermission, for three, four, sometimes ten, and once for twenty hours at a time. The matter which he expectorated was often extremely foetid, became gradually more bloody, and, at last, in the fits of coughing, he brought up pure blood in considerable quantity, and which sometimes flowed from his mouth, uninterrupted by the cough; the pain and fever were always relieved after the fits of coughing and hæmorrhage, and they increased after these stopt or abated. About the fourteenth

teenth day from the first violent attack of the cough, he began to spit, in small quantity, a white matter streaked with blood. The cough and fever now decreased very sensibly, the pulse fell to one hundred, the pain went entirely off, the breathing became easy, and, in a fortnight, he had gained so much strength as to be able to quit the hospital. In a fortnight afterwards, his complaint again returned with as much violence as before, and had nearly the same duration. Since this time four years have elapsed, during which he has never had the smallest complaint in the chest, and now enjoys perfect health and strength.

§ 2. *Of difficult Breathing, or Asthma.*

In this complaint the patients commonly breathe, with a wheezing or crackling noise, thirty or forty times in a minute, and still oftener after eating, or after the most moderate exercise. They feel a general uneasiness in the upper part of the body, which commonly obliges them to sit up; and likewise a tightness or pain across the scrobiculus cordis, which prevents them, whether sitting or lying, from straightening the spine, and obliges them to keep the body much bent forwards; and sometimes makes them lie with their knees drawn up. They complain of a sense of weight either in one or both sides of the chest, or at the pit of the stomach; when this last is the case, they sometimes lie on their face, and when they turn on their back, have the sensation of something falling from before; or if they turn to either side, of something falling from the opposite side. They often awake in a fright. Their pulse is about one hundred in a minute. This disease is not unfrequently attended by a cough with spitting, or by dropical swellings; and sometimes by rheumatism. It continues

for many years, increasing by fits ; and I have not known it, when unaccompanied with other diseases, prove fatal.

Is it not probable, that in these cases there is a fluid in the cavity of the chest ? or a superabundant quantity of fluid in the pericardium ? or that this membrane (in consequence of inflammation) adheres to the forepart of the chest ?

An instance of difficult Breathing relieved, upon soft Tumors appearing externally.

A woman, aged sixty, formerly very healthy, after having been for several nights exposed to cold, was seized with great pain and difficulty in breathing, and with a severe dry cough, from which she was seldom free above an hour in the day. In about a month from the beginning of the complaints, a tumor appeared on the left side near the lower part of the scapula ; and, a month afterwards, two smaller tumors were observed a little above the mamma of the same side : as these tumors increased in size, her complaints abated, and, in nine months, when the tumor on the back, now almost hemispherical, was larger than a new-born child's head, and each of those on the breast nearly the size of an apple. She perceived no difficulty in breathing, unless after exercise, and her cough was seldom severe : she had scarcely any pain in the tumors, which felt soft, as if they contained a fluid, and the skin which covered them was of the natural colour. When she coughed, the tumors swelled, became hard, and, as she imagined, were in danger of bursting.

In the preceding case, was there not an evident communication between the tumors and the cavity of the chest ? Is it not probable, that

that matter, formed in the cavity, had made its way through the parietes ? Could these tumors have been opened with safety, or advantage ?

A Case of difficult Breathing immediately relieved, by the spontaneous Discharge of Matter from the Side.

A woman, aged twenty, received a violent blow with a man's fist on the lower part of the right scapula ; she fell down instantly insensible, and remained so an hour : when she recovered her senses, she could hardly breathe, and the part where she had been struck was swelled and discoloured. Three days after the accident, she began to spit blood by coughing (sometimes in clots), and she continued to do so for two months, during all which time she could not endure any posture but laying on her face, resting on her elbows and knees. In about ten months, the pains in her chest, and difficulty of breathing, having nearly left her, her only remaining complaint being fits,* which came on soon after the accident, and to which she had been subject ever since, she was seized with chilliness, shiverings, cold sweats, sometimes partial, sometimes general, head-ach and giddiness, her pulse was about eighty-four, her skin itched violently, and many small itchy pimples, and painful blisters, appeared on it. After twelve months, the pain of the right side again increased ; in fourteen months it affected greatly her breathing, and she could not bear even the gentlest exercise, nor lie on the right side ; in fifteen months, she was obliged to sit up constantly, supported in bed, and frequently said, that something was collecting in her right side, although there was no swelling or discolouration of the part to be observed. Towards the end of the fifteenth month, a slight redness
appearing

* Probably of the hysterical kind.

appearing in one part of the side, a poultice was applied, and, in a few days, matter burst forth, to the quantity, as she informed me, of two quarts; her difficulty of breathing was instantly relieved. Several months after this, she had severe pains, or stitches, in her side near to the wound, which was between the sixth and seventh rib; but these were removed by the application of a blister, and the appearance of many large boils. She has, ever since this time, though now four years after the accident, enjoyed perfect health.

§ 3. *Of Pains in the Side.*

These pains are sometimes so acute, and so much increased by inspiration, that the patient dares hardly attempt to breathe. He cannot bear the slightest pressure on the part affected, nor, while the pain continues violent, lie upon that side; but commonly lies on his back, with his head very high. His pulse is small, and about one hundred in a minute; with thirst, and sometimes head-ach. After the abatement of the pain, there is often a slight cough, without expectoration; and a degree of breathlessness, after exercise. The patient sometimes recovers perfectly in a few days, but sometimes the complaint lasts from one to three weeks. These pains, in some cases, attack by fits, and then they are of longer duration; or they accompany hysterical symptoms, but are then seldom fixed. The cause of them is frequently unknown; they sometimes come on from exposure to cold, and sometimes are occasioned by external violence.

CHAP. III.

Observations on the Effect of Remedies employed in the Cure of Diseases of the Chest.

IN diseases of the chest I have hardly ever observed any certain good effect from internal medicines. Vinegar of squills, has, on some occasions, seemed to give relief to patients affected with cough and difficult breathing; and oily medicines, or spermaceti, appeared almost certainly to allay, for a short time, violent coughing. But the remedies which have still greater and more lasting effects, are bleeding, blisters, and other local discharges; also fomentations. Bleeding is the appropriated remedy for a cough, and, except in the last stage of consumption, seldom fails to afford very considerable relief, which sometimes is felt immediately after the operation, at other times not till the next day, or even the third day; and upon some occasions, not till after repeated bleeding. This remedy is also of service in cases of difficult breathing, and in pains of the side; although, for the latter complaint, the appropriated remedy is a blister, which almost constantly gives relief either immediately, or the day following.

Blisters are likewise of considerable efficacy in cases of difficult breathing, or hoarseness, and sometimes of cough. Setons or issues are useful in pains of the chest; and fomentations are of service in pains occasioned by external injury. From the early application of these remedies, pains of the side frequently, and dry coughs, sometimes, terminate favourably; but if they are delayed for a week or a fortnight,

fortnight, the disease does not yield to them, but seems to keep on in its natural course.

In cases of cough with expectoration, and of difficult breathing, or asthma, these remedies seem to afford only a very transitory relief, and to contribute but little towards retarding the progress of the disease. Those disorders, therefore, which are the most common, and the most fatal of any, are unfortunately least under the power of physic. I have known good air of service in such cases, after bleeding had failed to afford even a temporary relief.

PART III.

P A R T III.

*Diseases of the Fluids.**

C H A P. I.

Diseases of the Fluids, illustrated by Dissection.§ 1. *Extravasation of the Serum, or thinner Part of the Blood.*

A WOMAN, aged twenty-three, who had never menstruated, and, for many years, had been in a bad state of health, but without any particular complaint, became anasarcaous about six weeks before her death. She had no cough, nor was her breathing laborious, although she frequently sat up in bed, and speaking was troublesome to her: she only complained of the swelling of her body, and of weakness of her eyes. She died quietly, and rather unexpectedly, in the night.

A transparent yellow fluid was found in most parts of the cellular membrane, a similar fluid in the abdomen, and a more than usual quantity of fluid in the pericardium, which adhered by a broad surface to the ribs and pleura of the left side: the lungs of this side, on first opening the thorax, were not visible, but after separating the pericardium from the ribs, and drawing it forwards, they were seen
H firmly

* I chose this title, not from any idea that the diseases described under it were diseases of the fluids only, and that the solids were not likewise affected; but because the changes which took place in the fluids were evident to the senses, whilst those of the solids were not.

firmly adhering to the posterior part. They were intirely red, not more than three inches broad, thin in proportion, not divided into lobes, not vesicular, every where hard, and, at each extremity, nearly of a tendinous consistence, and adhering so firmly to the ribs, that they could not be separated from them by pulling: the lungs in the right side adhered likewise to the parietes, in other respects were found, as were the abdominal viscera.

As anasaruous swellings so frequently accompany diseases of the lungs, is it not probable, that they have some dependance on the state of this organ?

§ 2. *Extravasation of the red Part of the Blood.*

A woman, aged fifty, who, a fortnight before, had been seized with a fever, of which she could give no distinct account, complained (the fever still continuing) of pains all over her, and red spots appeared on her arms, breast, and legs: she was costive, her tongue parched, and covered with a black crust, or slough; her pulse, small, but not very quick; she was at times delirious, and often quite sensible. The colour of the spots becoming gradually darker, and her pulse sinking, she died about the nineteenth day of her illness.

Forty hours after her death, we examined the body, when, besides red and purple spots, of about a quarter of an inch diameter, which were very general on the surface, particularly of the extremities; there were also some blue blotches. The purple spots, viewed with a microscope, appeared of an uniform colour, whilst the red spots, which were broader, seemed a congeries of minute specks and ramifications. The cuticle, separated from the skin by boiling water;

water; was found not in the least affected by the spots, which appeared more distinct after its removal: they were confined entirely to the skin, though only visible on its external surface; and they disappeared altogether, when, after removing the cuticle, the skin was macerated in water. Sometimes, immediately under the spots, there were small effusions of blood in the cellular membrane; and, under the blotches, both this membrane and the fat were entirely red; but the muscles never were affected. After having very carefully and successfully injected one of the arms, no extravasation of the injecting fluid could be perceived, either on the skin, or in the cellular membrane; nor could we see any extravasation or enlargement of vessels on a piece of the skin, which had several spots, when injected and dried. The viscera of the thorax and abdomen were found: in the cavities of the heart and large blood-vessels, were found small but not firm polypi. A bit of the black crust, or slough, taken from the tongue and macerated for some days in water, tinged it red: what remained was a white mucus, readily diffusible in water, and somewhat resembling moistened bread.

As there was no extravasation to be discovered after a very minute injection, is it not probable that the extravasation of the colouring part of the blood, in the preceding case, was more owing to the state of the blood than to that of the blood-vessels?

§ 3. *Extravasation of coloured Serum, &c.*

A man, aged twenty-four, was suddenly seized with shivering, which, after returning two or three times, was followed by the symptoms of fever; he complained chiefly of heat, slept much in the day; in the night was often delirious: his pulse was quick and small,

his tongue dry, but not foul; he had two or three stools a day, and his urine let fall a copious cream-coloured sediment, resolvable by heat. On the seventeenth day, he felt a pain in the lower part of his thigh, which, on the twentieth, was greatly increased, and extended down the outside of the leg; the parts affected were red, and somewhat swelled: his tongue was parched, and his pulse fuller than before. On the twenty-fourth, the limb had become in part livid, the leg and foot were greatly swelled and painful; his countenance was pale, his tongue black, his pulse fluttering: and, on the twenty-fifth, the day of his death, the cuticle was raised in blisters, the leg having exactly the same appearance as it had two days after, when the body was examined.

The lower part of the right thigh was, on the outside, red, or livid, and covered with small blisters, containing a red liquor; the lower part of the leg and foot, of the same side, were very much swelled, and, on the outside, which was of the same colour with the thigh, there was a great blister, from which, before death, two ounces of a transparent red fluid, without smell, were taken. On the right arm, was a slight livid spot. In the veins of the pia mater, we found blood and air alternately interposed. The fluid in the lateral ventricles, was reddish, and coagulated slightly by heat. The liquor taken from the leg being immediately mixed, in different proportions, with water, gave it a red tint, the mixture remaining transparent; but, next morning, there was either a white cloud formed, a fur adhering, or a sediment deposited: the same liquor unmixed with water, suffered no change till the fourth day, when it also let fall a similar sediment; but it still, and for several days afterwards, remained transparent: it was coagulated by heat almost as firmly as the serum, a small quantity of an aqueous fluid remaining.

Did not the firm coagulation, by heat, of the extravasated fluid, shew that it was chiefly serum? Did not the admixture of the red part of the blood with this fluid, and with the lymph of the lateral ventricles, shew a tendency to putrefaction? although, as there was no disagreeable smell, this could hardly be said to have taken place. Was not the air interposed between the portions of blood in the veins of the pia mater, a further evidence of this tendency? for I have, on other occasions, remarked, that large vessels which passed near an internal putrid ulcer, contained, in like manner, portions of blood, and of air, alternately.

§ 4. *Putrefaction of the Fluids.*

A woman, aged twenty, was seized with shiverings, followed by fever; she became dull, heavy, stupid, and sometimes delirious: she had a violent purging, her tongue and eyes were parched, her pulse quick and small, and there were petechiæ on the right arm; she was quite neglected 'till the tenth day of her illness; she died on the eleventh, and, immediately after death, a change of colour took place in the body.

This discolouration was principally on the right side, from the breast to the middle of the thigh, and from the linea alba to the spine; the upper and lower parts, and belly, were green, the back livid, and the pudenda quite black: at incisions made on any of those parts, a considerable quantity of a muddy liquor, nearly of the same colour with the part, run out: it was so intolerably foetid, that a man had almost fainted from smelling to it; the parts from which it flowed were tender, and easily pulled asunder. In the pudenda, the blackness penetrated to the cellular substance, and

and fat, but it did not extend inwardly beyond the nymphae, and backwards not quite to the anus; the green colour of the abdomen penetrated through the integuments, the fat, and the oblique muscles; but the recti, transverse muscles, and peritoneum, were free from it. The livid colour of the back penetrated almost to the bones, near which the muscular fibres appeared sound; there were a few red specks on the arm and breast of the right side; nothing preternatural appeared in the cavity of the abdomen, except one black spot on the fundus uteri.

After having visited this woman, I became for a minute, blind, stupid, and confused, but I suffered no inconvenience either during the dissection, or afterwards. One drachm of the putrid liquor received at the incisions, was, an hour afterwards, along with three drachms of water, injected into the crural vein of a healthy bitch, who was giving suck: in a minute she vomited; in an hour all her limbs trembled, and in an hour and a half she seemed in the greatest + uneasiness, whilst her puppy, who had given over sucking, was making a noise: she frequently vomited during the day, and in the night; next day, when called to, she moved slowly and feebly, and could hardly keep her eyes open; her hair stood on end, and she refused taking food 'till the evening, from which time she gradually recovered.

Twelve hours after death, I examined the body of a young man who died of a fever resembling the preceding. The skin of the left breast was brown, and the pectoral muscle had lost its colour and was rotten; the liver, likewise, was in so tender a state, that a very small force was requisite to push the finger into any part of it. The other abdominal viscera appeared sound.

Soon

Soon after examining this body, I felt an acute pain at the end of the finger which I had pushed into the liver ; it inflamed : a small piece of it near the nail became black and mortified, and, after a few days, was thrown off by suppuration.

Are dullness, stupor, and lowness of pulse, the criteria of this fever, or of a tendency to it ? Is infection more readily communicated from the living than from the dead body ? May an external part of a healthy body be affected without injuring the rest of the system ? If the putrid matter has been mixed with the blood, will a putrid fever always follow ? Is there a connection between this and the petechial fever ? From the external parts being principally affected, is it not probable that the air has some influence in promoting the putrefaction ? Would not the external application of antiseptics have an effect in retarding this process ?

§ 5. *Extravasation and Putrefaction, united in the same Subject.*

A woman, aged fifty, who, though addicted to the use of spirituous liquors, was healthy till four years before her death, when she was seized with pains of the chest, cough, and difficulty of breathing, which going off in a few months, she continued well for three years : her complaints then returned, and, for two months, were accompanied with a very copious discharge of thin saliva ; soon after the stopping of which, she became generally œdematous. During a few months in the summer, the symptoms were moderate, but, four months before her death, they were more violent than ever ; her breath being very short, obliged her to sit up almost constantly ; for, when lying, she was in danger of being suffocated ; she could utter but a few words without stopping ; her cough was very troublesome, and, in the fits of it, her face, which was at all times bloated,

bloated, became purple; she often performed all the motions of coughing, without uttering any sound; she was thirsty, her tongue dry and whitish; her pulse about one hundred; her urine deposited a copious sediment, like powdered bark, the liquor above resembling diluted claret. The swelling was universal, but the lower extremities were so much distended, that they could hardly be moved. The belly being also greatly distended, she was tapped, and several gallons of a greenish liquor, by this means, were evacuated. After the operation, she was, for several days, much relieved; but, on the sixth, having had a violent fit of shivering, she died suddenly.

In the month of February, thirty-four hours after her death, I examined the body. It was generally swelled, with red specks and purple spots on several parts of the surface; the latter, about one third of an inch in diameter, penetrating quite through the skin, were owing to extravasated blood. The face was of a deep purple; on the breast were long, ramifying, red vibices; a portion of the cuticle, on the inside of the thigh, was raised in a blister, containing a thin, reddish fluid, and, for a considerable way round the blister, was easily separable from the true skin: in the abdomen, were several quarts of a reddish muddy fluid, in some degree coagulable; the contents of this cavity were sound; the liquor pericardii was reddish; the lungs every where adhered, by a cellular substance, to the neighbouring parts, and, though there was no particular hardness, or tubercle, to be seen, they were not quite so soft as in a sound state; air blown in at the windpipe escaped, and distended the cellular substance on their surface; the same thing happened, when, in a portion of the lungs cut off, air was blown in at a branch of the windpipe, or pulmonary vein: when the pulmonary artery was blown into, its smaller branches were alone distended; a black substance accompanied the

the vessels in their course, and appeared, upon a transverse section, like a black circle furrounding them.

Was the want of sound in coughing owing to the air, in the time of that action, escaping from the vesicles into the cellular substance? Is this, therefore, a sign of ruptured vesicles? Did the copious discharge of saliva, in the beginning, shew a separation of the thinner fluids; which, upon the stopping of that discharge, were deposited in the cellular membrane, and in the abdominal cavity? Did the purple colour of the countenance, the spots and vibices, shew that the red part of the blood was broken down, and entered vessels which, in a sound state, it could not do? Did the colour of the urine, of the liquor in the blister, abdomen, and pericardium, shew a solution of the red part of the blood in the thinner fluids? Do the fluids in cavities sometimes acquire a red tint, either a few days before, or a few days after death? Was the diseased state of the fluids, in the preceding case, to be imputed to the affection of the lungs, to the use of spirituous liquors, or to both?

In dissecting the body last mentioned, having broken the ribs that the lungs might be more fully seen, the pointed splinters of them punctured the cuticle on several of my fingers, especially of the left hand. On returning home, about an hour after, I was seized with shiverings, weariness, and pains all over my body: towards evening I had a violent head-ach, and some degree of fever; but next morning awoke perfectly well. The wounds did not heal up, but became red, swelled, and, though not very painful, for several months gradually increased. Having the same day, immediately after examining this body, examined the body of a man who had had a venereal complaint, it was supposed that from the latter, the injury might perhaps have been received: I, therefore, made trial

of a variety of mercurial applications, after each of which the tumors became larger, redder, and more painful; they were then burnt down by lunar caustic, but always grew up again, and, at last, had the appearance of warts, with their bases swelled and red. In less than a twelvemonth after the accident, there appeared on the back of the left hand, where there had been no wound, a small, moveable, round tumor, resembling a lymphatic gland, which gradually increased; the skin became livid, and there were sometimes slight shooting pains in the part. Soon after the appearance of this tumor, the glands in the left armpit swelled, and became, in some degree, painful; the glands of the same side, under the lower jaw, also swelled, and several small sores broke out upon the tongue and inside of the mouth; soon afterwards the glands also of the right armpit swelled. Being at a loss how to stop the progress of so uncommon an affection, I began to take mercurial medicines, in considerable quantity, which I had several times employed before, though sparingly: at last, I underwent a salivation by unction; but never observed, during this course, nor for a considerable time after it, the smallest favourable change upon the tumors on the hands, the swelled glands in the armpits, or the sores in the mouth; I, therefore, submitted to have the tumors removed by the knife, several of which growing up again, were repeatedly cut off. The sores, while healing up, never had a good appearance, but were sloughy, and sometimes very painful. In about a fortnight, after the last remaining tumor had been cut off for the second time, and about two years after the wounds had been inflicted, the swelling of the glands subsided, the sores in the mouth healed up, and have not (though it is now almost three years) in any degree returned.

C H A P. II.

A Description of the Symptoms of the Diseases of the Fluids, taken from those Cases where the Patients recovered, or where the Author had no Opportunity of examining the Body after Death.

§ 1. *Swelling of the Belly, with Fluctuation.*

THIS swelling sometimes occurs alone, but most commonly it is attended with external, or œdematous swellings. Women are chiefly subject to it from obstruction in their menses, or during pregnancy, in which case it continues after delivery. It happens to persons of either sex after a cold, cough, or fever, and sometimes without any disease preceding it. It is accompanied with difficult breathing, cough, thirst, a diminution in the quantity of urine, and, at times, with fever. The patients, in general, have a faded, or fallow complexion, though sometimes they retain a ruddy and healthy appearance. I have known this complaint continue five years, without causing any considerable uneasiness; but when the swelling has reached its utmost extent, the condition of the patient is truly miserable: obliged to lean forward, the belly supported by pillows, tormented with violent pain in the bowels, and with bile forced up into the mouth almost every minute. This disease is frequently relieved, or carried off, at least for a time, by spontaneous purging; sometimes by spontaneous sweating. When it returns, as it sometimes does, several times in a year, it terminates fatally.

Might not sudorifics be tried in those cases where purgatives have failed?

§ 2. *General external Swelling, retaining the Impression of the Finger.*

This swelling is more remarkable in the lower, than in the upper parts of the body, and is frequently more considerable in the right than in the left side; the parts affected, are, sometimes, though rarely, tender and painful to the touch. This complaint is sometimes unpreceded by any other, or it follows after sickness and indigestion, sudden suppression of the menses; and frequently after a cough, or some other affection of the chest. It is commonly accompanied by difficult breathing, thirst, and paucity of high-coloured urine, becoming turbid when cold. Persons of very different ages, from twelve to sixty-two, are subject to this disease: some have the countenance bloated, others have a spontaneous and very considerable bleeding at the nose; in either case, and not otherwise, the disease terminates fatally.

§ 3. *General external Swelling, with Swelling of the Belly.*

The union, or combination, of these complaints, is to be met with most commonly in persons naturally of a weak or unhealthy constitution, the external swelling almost constantly precedes the swelling of the belly; they follow from the same causes, as when single or alone. I have known them happen, and to a high degree, in a fortnight, after a bruise on the chest. They are accompanied by the same symptoms as § 1. and § 2. often with faintness and lowness; sometimes with vomiting of blood, or purple spots on
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the skin, both fatal symptoms. They sometimes terminate favourably by a spontaneous purging, increased discharge of urine, or a flow of thin fluid from the salivary glands.

Is not either species of dropfy commonly a secondary disease ?

Is it not evident, from the bleeding at the nose, vomiting of blood, and purple spots, that the red part of the blood is broken down, or the blood-vessels weakened ?

Should not the view of the physician be directed rather to the amendment of the fluids and solids, than to the evacuation of the former ?

Is it likely that this amendment may be attained by animal food and Peruvian bark ?

When the evacuation of the fluid is necessary, and when purgatives, diuretics, and sudorifics have failed, might we not imitate nature, and excite a salivation ?

§ 4. *A fluctuating Swelling on the Loins.*

A man, aged thirty-two, having been thrown down on his face, the narrow wheel of a loaded cart went directly across his loins from left to right; he was carried home, neither wounded nor in pain; and, though benumbed in the loins, he walked in the evening. For some days he complained of pain in his bowels, and had no stool. The day after the accident, we observed a fluid collected under the integument of the loins. In a fortnight, the integuments were greatly swelled,

swelled, and an evident fluctuation was felt on striking the tumor. In a month, the fluid having spontaneously decreased, did not fill the cavity which it had formed, and by change of posture, or upon pressure, it moved from place to place, the patient himself being sensible of its motion, as he had been before of its fluctuation. The cavity, at this time, extended from the os coccygis, seven inches upwards ; and from the left great trochanter to within a few inches of the same tuberosity on the right side. In two months, the fluid had almost wholly disappeared, and the integuments having become firm, adhered to the parts underneath. In a few weeks more, he was free from complaint.

N. B. Fomentations had been employed.

§ 5. *Fever, with red, or purple Spots on the Skin.*

This disease commonly begins with a fit of shivering, which sometimes returns, and is always followed by fever. The patients, in general, take to their beds in the beginning, although they sometimes go about for three or four, or even nine days, uncertain of the nature of their complaint. The spots appear, at different times, from the fifth to the tenth day, and are either very small, of a deep red or purple colour ; or larger, about one quarter of an inch in diameter, and of a paler red : both kinds frequently appear in the same person ; the former chiefly on the extremities, the latter all over the body. The breathing is laborious, and sometimes accompanied with a snorting noise. The eyes are red ; the tongue and lips parched, or chapped, and covered with a black, tough, semi-transparent crust ; which, by maceration in water, becomes at first gelatinous, and afterwards of the consistence of syrup. Sometimes blood is effused on the tongue,
and

and hardens on its surface. The pulse seldom exceeds one hundred in a minute, sometimes slower; it is low, and strikes the finger so gradually, that it seems rather to press upon than strike it: it frequently intermits. The patients complain of pain, or of noise in the head, and of general uneasiness; they are dull, and so drowsy, that they can hardly keep their eyes open; they are sometimes sensible, but more commonly delirious, especially in the night, when, unless prevented, they frequently get out of bed, but are not outrageous, and are easily prevailed on to return again to bed. The liquor discharged by blisters, though of a dark brown colour, is free from smell. The stools are sometimes of the same colour, and the urine deposits a spongy, sometimes reddish sediment, in small quantity. there is seldom any tendency to sweating, but very often to purging, the sick having commonly four or five stools in twenty-four hours; and it is difficult to determine, whether this evacuation be hurtful, or serviceable. An abatement, or relief of the symptoms, commonly happens on the fourteenth day, seldom sooner; frequently not till about the twentieth. For several days after the abatement of the fever, the patients are often troubled with a dry cough, and sometimes become deaf. Of ten patients whom I saw in this fever, two died: the first, who had a most violent purging, died on the sixth; and the second, who was costive, died on the twenty-second day. This fever appeared, in some instances, to have been communicated by infection.

Did the spots, the blood effused and concreted on the tongue; the colour of the liquor of the blisters; that of the stools, and the sediment of the urine; shew that the red part of the blood was broken down?

C H A P. III.

Observations on the Effects of Remedies given in the Cure of Diseases of the Fluids.§ 1. *A general Account of those Effects.*

IN the spotted fevers, instances of recovery were most frequent after the use of bark, of cordials, and of blisters. The swelling of the belly, or of the external parts, in general, subsided, though commonly only for a time, from the use of the more powerful purgatives; viz. jalap, elaterium, and dried squills, given either separately or combined. Also during the use of diuretics, as nitre, the sal diureticus, infusion of horseradish, and tincture of cantharides. The swelling of the belly constantly returned after tapping, and sometimes the patients died very soon after this operation. The puncturing the legs was likewise attended with danger, and, in one case, the limbs inflamed, became black, and the patient died in three weeks. As evacuations then are most commonly ineffectual, and even dangerous, a medicine is greatly wanted which would produce such a change in the parts, as after absorption to prevent the further extravasation of the fluid. The two following singular instances of the happy effects produced by mercury and bark, may possibly suggest some useful hints on this important subject.

§ 2. *The Effect of Mercury in an obstinate Swelling of the Limbs.*

A young woman having, on the day her menses began to flow, taken imprudently, whilst hot, a draught of cold water, the discharge
immediately

immediately stopped ; her legs inflamed and swelled ; and she was seized with shiverings, followed by fever and pains all over her body ; after two or three weeks, the fits of shivering, succeeded by fever, frequently returned again, and at those times the inflammation of the legs increased. In about a year, the whole of the lower extremities had attained an enormous size ; but the swelling was not now attended with inflammation ; on the contrary, the limbs were cold and hard : it differed also from the œdema, as it did not retain the impression of the finger ; nor was sensibly increased towards evening. In every other respect, excepting a diminution of the catamenia, the patient seemed to be in perfect health. Notwithstanding the use of various medicines, and the application of caustics and blisters, which last, by the bye, occasioned no discharge, her limbs remained in the state above described for almost two years and a half ; she then began to rub on her legs the mild mercurial ointment, gradually encreasing the quantity to half a drachm, afterwards to one drachm every night ; she lived low, and the limbs were kept in a horizontal posture. In three weeks, the swelling having subsided, the legs were soft and flaccid ; and, in three months, the skin was so loose, that it seemed probable, that what had formerly distended it, was now mostly absorbed. Her mouth was but little affected ; her bowels not in the least : she sweated much, and made water in considerable quantity.

§ 3. *The Effect of Bark in a copious Discharge of putrid Saliva.*

A woman, aged thirty-eight, after several irregular fits of coldness, succeeded by heat and sweating, was seized with a swelling of her cheeks, which externally were tense and shining, and internally were covered with a firm white crust, or slough, above half an inch thick, and which was totally insensible when cut through with a knife ; the

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palate

palate and gums were also covered with a similar slough; the tongue was almost unmoveable, so that her speech was seldom intelligible, and the teeth could not be brought in contact, owing to this crust projecting between them: there was, day and night, a continual discharge from the mouth of a viscid, ropy fluid, frequently bloody, and so abominably foetid, that it was disagreeable to come within several yards of her; the quantity discharged was about four pints in twenty-four hours. The fluid spontaneously separated into two parts: the one a thinner; the other a more viscid and heavier; the former not at all, the other only partially coagulable by heat; the patient could swallow only the thinnest liquids, and even these with difficulty: she had no appetite, but had daily four or five loose stools: her pulse was very small, between one hundred and six, and one hundred and twenty. To this miserable condition she had gradually arrived; when, on the twelfth day of her illness, she began to use the bark in the following manner:

R. decoct. corticis peruv. unciam unam.

Tinct. ejusdem, drachmas duas.

Quarta quaque hora sumendas.

In four days the discharge was thinner, and less offensive; she had less difficulty in swallowing, had some appetite; her pulse was slower, her purging had stopped, and the crust began to fall off from the angles of the mouth; continuing to recover, she, in a few days more, began to have pain in her cheeks, which before were insensible; afterwards in her tongue; and, lastly, in her gums and teeth; the agony of which was sometimes so great as to prevent her sleeping. When the crust had fallen off from the gums, they appeared pushed out in the form of papillæ. On the twelfth day, after she began to take the bark, her face, outwardly, had almost its natural appearance; the crust had fallen off entirely from the cheeks, palate,

palate, and gums, the papillæ of which had also subsided, and there was but little of it now remaining at the root of the tongue: she could bring her teeth close together, could move the tongue a little, and speak more distinctly. The discharge, now far less copious and less foetid than formerly, did not flow constantly, but, being collected in the mouth, was spit out; she had hardly any pain, could swallow solid food, was costive, and her pulse between eighty and ninety. In a few days more the discharge stopped entirely, and, in a few weeks, she had no complaint but stiffness in the parts, which prevented her from opening her mouth, or putting out her tongue freely; and some months afterwards, being perfectly well, she went into the country.

STOUT man, aged twenty-three, was suddenly seized with a fever, accompanied almost constantly with violent delirium. When brought to the hospital, he walked about nearly as a person in health, and answered some questions sensibly; but the nurses gave to others, and a certain wildness in his looks discovered the dangerous state he was in. As he could not otherwise be kept in bed, he was bound with broad strips of bandage, his face and eyes were red, his pulse neither quick nor full; delirium told he was very well, that his giddiness had gone off, and that he was constant. Every night, and frequently during the day, he was noisy and unmanageable, turning when a noise was made, or when On the night but one patient died. He took the usual diet, but out of bed, and with assistance, but even then could not get up. His pulse full, his face red, his voice changed to a hoarse cry; and in a few hours after, on the morning of the ninth day, he expired.

A woman.

K 2 PART IV

P A R T IV.

Diseases of the Head; Nerves, and Muscles.

C H A P. I.

Diseases of the Head, &c. illustrated by Dissection.§ 1. *Lymph lodged between the Dura and Pia Mater.*

A STOUT man, aged twenty-three, was suddenly seized with a fever, accompanied almost constantly with violent delirium. When brought to the hospital, he walked about nearly as a person in health, and answered some questions sensibly; but the answers he gave to others, and a certain wildness in his look, discovered the dangerous state he was in. As he could not otherways be kept in bed, he was bound with broad straps of leather; his face and eyes were red, his pulse neither quick nor full; he always said he was very well, that his giddiness had gone off, and complained of his confinement. Every night, and frequently during the day, he was noisy and ungovernable, tearing whatever came within his reach. On the night but one preceding his death, he broke the straps, got out of bed, and it was with difficulty that three men could again lay him down. He then sweated profusely, his pulse sunk, his face became pale, his voice changed to a doleful cry; and, in a few hours afterwards, on the morning of the ninth day, he expired.

A woman,

A woman, aged sixty, was seized with a fever, accompanied also with violent delirium: when asked how she did, she commonly answered she was very well, excepting towards the end, when she complained of her head; she was noisy in the evening, and during the night, and it was with difficulty that she could then be kept in bed. Her pulse was quick, and sometimes intermitting; her eyes red, her lips black: at last, her face having been frequently distorted, and her arms sometimes convulsed, she died on the thirteenth day.

A stout man, aged thirty-two, after several fits of shivering, was seized with a fever, accompanied with violent delirium, though less constant than in the preceding cases: he was sometimes sensible during the day, and complained greatly of his head; he was outrageous on particular nights only; his eyes were red, and his pulse quick. He died on the eighteenth day.

In the three preceding cases, after the scull had been sawed through, on cutting the dura mater* and inclining the head, a thin colourless liquor, not coagulable by heat, run out, to the quantity of about two ounces, in the first case; of about an ounce and a half in the second; and of about half an ounce in the third. After the upper part of the scull had been separated from the dura mater, on raising this membrane, a small quantity of lymph was observed lying between it and the pia mater; and, after the brain had been removed, the medulla oblongata and spinal marrow appeared surrounded with lymph. In the first case, there were no other preternatural

* We were led to perform this part of the dissection with caution, having formerly found lymph in the encephalon of a man, who before death had similar symptoms, but whose head was not opened so carefully as to enable us to give an exact description of it.

natural appearances in any part of the encephalon ; in the second and third case, there was a small quantity of lymph effused between the convolutions of the brain, under the pia mater ; and, in the second case, there was rather more than the common quantity of lymph in the lateral ventricles.

Are outrageousness, and insensibility to pain, characteristics of this species of fever in its highest degree ? From the violence of those symptoms being nearly in proportion to the quantity of lymph effused, is it not probable that they are occasioned by the pressure of that liquor upon the brain ?

§ 2. *Suppuration of Part of the Dura Mater.**

A woman, aged thirty-four, stooping to avoid a beam of wood which a man carried on his shoulder in the street, was struck by it in the upper and fore part of her head so violently, that she fell backwards : she, however, got up again immediately, and, after wiping off some blood which came from the wounded part, walked several miles : she also next day walked several miles, but complained that the cold struck like a knife through her head. On the fourth day, she came to the hospital, when a tumor, which had risen about the wound, was laid open, and a fracture searched for, but none was found. Though sensible, she sometimes started and looked oddly. In the evening a delirium came on, and she was noisy a great part of this, and for many succeeding nights. During the day also she was frequently insensible and delirious, especially on the tenth and the three following days ; she often complained of exquisite pain in her forehead, which she would not suffer to be touched ; she also complained of weight and oppression,

* *Fig. xi.*

pression, and always cried out at the dressing or enlarging of the wound: her face was often distorted, and her limbs convulsed; sometimes she trembled, and frequently started when spoken to: the pulse was seventy, and pretty regular. On the fourteenth day the delirium had greatly abated; she became almost constantly sensible of her pains, and was apprehensive of danger; on hearing the least noise she started, and said it was like thunder in her ears: the pulse was between sixty and seventy. On the morning of the seventeenth, she had a fit of shivering, which returned afterwards, four or five times, at irregular periods: it was followed by fever and sweating: the pulse, during the fever, varied from one hundred, to one hundred and thirty, according to the violence of the fit, and the shortness of the interval between it and the time of examining the wound. About the twenty-first the delirium went off entirely; she was dull, drowsy, kept her eyes shut, and seldom spoke; she afterwards became gradually weak, apt to faint when sitting up to have her wound dressed: the pulse sunk; and, on the twenty-eighth day, after receiving the blow, she expired.

The contiguous surfaces of the diseased part, both of the dura mater and of the cranium, were each of them moistened with a little purulent matter; but the bones were smooth, and, in every respect, sound. The internal surface of the dura mater, opposite to the diseased part; the falx, and the two lower sides of the longitudinal sinus, appeared quite sound, but the internal surface of the upper side of that sinus, was of a light straw colour, smooth, and, when held opposite to the light, did not seem thickened. All the other parts of the membranes of the brain, and of the cerebellum, were carefully examined, but we met with no other preternatural appearance.

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Where the reflexion of the dura mater forms the falx, is there any cellular substance in which pus may be formed and collected? Does matter collected there, make its way more readily through the external lamina of that membrane to the bone, than through its internal lamina to the brain? In the preceding case, was there no matter formed till about the seventeenth day, at which time the delirium went off, and the shiverings began, which were soon followed by drowsiness? If fatal consequences arise from a few drops of matter in the head, what have we to apprehend from a larger quantity of this, or, probably, of any other fluid, collected there.

§ 3. *The Veins of the Pia Mater apparently enlarged.*

A man, aged twenty-three, after having been drunk and riotous in the streets for two nights, was seized with pains, particularly in his head, attended with fever: he sweated in the beginning. On the fourth, and some following nights, he was delirious, though not unmanageable: during the day he was sensible, until the seventh, after which he appeared quite stupid, and his eyes, both day and night, were open and fixed; his body at first costive, was now loose, and his stools and urine came away involuntarily; he sweated profusely, and died quietly on the eleventh day.

In sawing the skull rather hastily, the veins of the pia mater, which terminate in the longitudinal sinus had been, as we afterwards found, cut through, and about two ounces of blood had run out; yet those veins, when the cranium and dura mater were raised, appeared still distended with blood, and greatly enlarged. The other parts of the encephalon were examined, but nothing preternatural was seen. The lungs and heart were in a sound state.

§ 4. *No morbid Appearance in the Brain after an Apoplexy.*

A stout healthy man, aged thirty-one, who in the morning went out perfectly well, in the course of the day complained of giddiness and head-ach. In the evening, when walking with some companions, he stopped suddenly, saying, that his head-ach and giddiness were so great he could not go on. He immediately leant to a side, was violently convulsed, and, though his friends ran to his assistance, fell to the ground speechless and insensible. Twenty-four hours after the attack, he lay on his back, breathed high, with a snorting noise; his face was turned to the right, his mouth and nose drawn a little to the same side, and froth issued from his mouth; his eyes were shut, whilst tears ran from them; his pulse was quick and very high; his skin hot, and moistened with sweat; and the muscles of the arms quite relaxed. After thirty-six hours, there was little alteration in the symptoms, only that the eyes were now open, though fixed, and not affected by the near approach of objects; pulse also was lower, and his skin was neither so hot, nor so moist as at first. After forty hours, the *alæ nasi* were during inspiration drawn almost close to the septum; and, indeed, the trunk of the body seemed drawn up at the same time: the right side of the face was now frequently distorted; the right arm sometimes convulsed: the heat of the body diminished; the pulse was no longer to be felt, and, in forty-five hours, he expired.

The membranes, substance, and ventricles of the brain, cerebellum, and medulla oblongata, were all carefully examined, but nothing preternatural was observed. Upon inverting the trunk of the body, about an ounce, or more, of a bloody fluid, ran out from the

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spinal

spinal canal. The spinal marrow, owing to some neglect, was not examined. The viscera of the thorax, and of the abdomen, appeared perfectly sound. The stomach contained a yellow fluid.

§ 5. *Deep red Blotches, and partial Suppuration in several Muscles of the Body, in Consequence of a Wound.*

A man, aged forty-five, fell from a height of about eight feet, and struck his left leg against the point of a pick-ax. He walked a good deal after the accident, and the wound, for several days, was quite neglected. On the eighth day, he first felt pain in his throat, and, in the evening, swallowed with difficulty. On the eleventh day, the lower jaw was fixed so close to the upper, as to prevent him taking solid food. On the thirteenth day, when he was brought to the hospital, he could endure no posture but that of lying prone, resting upon his knees and elbows, raised up by pillows. Whenever he attempted to change that posture, and very often at other times, he was violently convulsed, and sometimes thrown out of bed. In the more moderate fits of convulsion, the course of which could be observed, he first started suddenly from the prone posture to his knees; the body was then drawn forward, the head backward, and the lips strongly pressed together; though he was, at all times, careful to insert the points of his fingers between them, over which, in breathing, the air rushed with a hissing noise. During these fits, which continued some minutes, the recti abdominis, sterno-mastoidei, and other muscles on the fore part of the neck; those within the arch of the lower jaw, and the masseters, were hard to the touch. He told us, that the fit began with a catching below the navel, that he had, at all times, exquisite pain in that part, and also in the fore
part

part of the neck, and near the jaw, and that he should be stifled, unless he kept his lips asunder, by inserting his fingers between them. The lower jaw was always immoveably fixed so close to the upper, that the point of the finger could not be pushed between the teeth, and any interval between them was more owing to the lower jaw being drawn back than to its being depressed: the sweat stood in drops upon his face and his body; his pulse was small, and between eighty and ninety: though he had the strongest desire to drink, yet the great difficulty he found in swallowing, made him most reluctantly put the cup to his head, and frequently withdrew it; and, when he had sucked in a little, he only swallowed a small part of it; the rest was squirted out immediately, and the lips and muscles of deglutition were strongly convulsed. In the evening of the fourteenth day, his face was pale, his body covered with cold sweat; his pulse intermitted; and when his convulsion fits came on, he could not raise his hand to keep his lips asunder, which was done by an assistant: the lower jaw was considerably relaxed. In the morning of the fifteenth day, at three o'clock, he spoke sensibly: at four he was suddenly convulsed; and, though lying on his belly in bed, was thrown on his back upon the floor, and died instantly. Four hours afterwards, the body being still quite warm, the lower jaw was immoveably fixed to the upper.

On the outside of the tendo achillis of the left leg, there was a wound, which passing before that tendon, penetrated as far as the skin on the opposite side behind the internal malleolus. The cavity of the wound, which contained pus, and two bits of woollen stocking, was about the size of a pigeon's egg. The posterior tibial nerve, in passing along it, was covered by a thin cellular substance, which, in the wound and several inches above it, was of a bright red; but the nerve cut across appeared sound. The muscles which formed the

sides of the wound, were partially suppurated, and, for a considerable way up the leg, of a deep red. The cellular substance and tendinous aponeurosis on the outside of the leg were, as high as the knee, of a deep red; the latter unequally so, being in some places almost black. In the upper angle of the wound, a nervous filament was lost. The fleshy part of the sterno-mastoid, sterno-hyoid, first scalenus, coracohyoid, longus colli, of the right side, were, in some places, of a deep red, as if from blood effused; and the longus colli, but no other corresponding muscle of the left side, was affected in a similar manner: the lower extremities of both stylo-hyoids, and of both hyoglossi, were of the deep red colour; the other muscles employed in deglutition, also the tongue, palatum, molle, pharynx, part of the œsophagus, and larynx, upon examination, appeared sound. There were several red spots on the external surface of the tendinous aponeurosis covering the abdomen, and on many parts of both recti abdominis, there was the same deep red colour, which penetrated quite through the substance of each muscle; the posterior surface of each being still more generally of that colour, and, in many places, particularly below the navel, the fibres were consumed, for about an inch of their length, by ulcers containing a reddish matter; the posterior parts of the sheaths of those muscles, were, in some places, opposite to the ulcerations in the muscles, of a light red. The masseters, the temporals, the muscles which pull the head back, and the viscera of both great cavities, appeared quite sound.

C H A P. II.

A Description of the Symptoms of Diseases of the Head, Nerves and Muscles, taken from those Cases where the Patients recovered, or where the Author had no Opportunity of examining the Bodies after Death.

§ 1. *Loss of Feeling and of Motion.*

THE total loss of feeling and of motion in different parts of the body most frequently happens during a fit of apoplexy, or general insensibility; sometimes it occurs before such fit, and sometimes there is a gradual diminution of feeling with feebleness, terminating in complete numbness and loss of motion, without any fit either preceding or accompanying it; the senses, memory, and speech remaining entire, or to a certain degree impaired. The parts affected are oft contracted so that the fingers are bent into the hands, and if at any time they are extended by force, which cannot always be done, they return immediately to their former situation; the leg, also, of the side affected is drawn back towards the thigh, and the foot towards the back of the leg; the paralytic muscles are at times suddenly convulsed, which occasions considerable pain, and they frequently tremble or shake, and are generally cold. Sometimes the whole body is affected by this disorder, although the one side more than the other; sometimes the lower half of the body, or only the lower extremities; or the feet and hands only, but most commonly the whole of one side, the other remaining unaffected. The stools, and, at times, the urine, are retained in the beginning, but towards the end, especially in bad cases, both of them run off involuntarily. The pulse is quick and small,

small, sometimes having a kind of vibration, or a very feeble heat is interposed between two common pulsations, and there are instances, even in favourable cases, where the pulse cannot be felt. Amendment, or recovery, is commonly preceded by a painful sensation of pricking or shooting in the part, after which, in a little time, the feeling and power of motion return, though in a slight degree; afterwards, upon those pains going off, the parts recover perfectly their feeling and power of motion, and lastly their strength.

The recovery of the patient is also sometimes preceded by an eruption of very painful spots, raised a little above the skin. The sense of feeling and motion commonly return first in those parts which are nearest the brain, proceeding gradually downwards from one member to another; but I have known recovery take place in a reverse order. The disease continues from one to three months, though, commonly, much longer; sometimes it proves fatal in five or six months from the first attack. Sometimes between the paroxysms the patient is for a year or two subject to giddiness, trembling, &c. The cause of this disease is often unknown. Sometimes it happens during a fever, and often supervenes slight injuries of the head, when, without any fracture of the skull, they have been followed by insensibility, either immediately or a day or two after the accident, and in all those cases, the side of the body affected is opposite to the side of the head where the injury has been received.

Do not the pains which commonly precede recovery, point out the use of irritating and painful applications to the part?

Does not the eruption of painful spots indicate, in a particular manner, the utility of blisters?

§ 2. *Loss of Motion with Relaxation of the Parts.*

All or only some of the limbs suddenly lose the power of motion, but without any remarkable diminution of feeling; this sometimes happens without pain; at other times it is accompanied or preceded by very violent pain. When unattended with pain the cause is commonly unknown, and, if the feeling is unimpaired, the patient, without any disagreeable sensation, recovers a little strength at first, and, finally, the perfect use of his limbs.

The cases attended or preceded by violent pains, most frequently occur amongst people who are employed in the several trades in which lead or quicksilver are used, such as glaziers, plumbers, colour-makers and gilders; there is this difference however, that those persons who have been exposed to the fumes of quicksilver, have, besides the other symptoms, almost perpetual tremors of the limbs.

In those cases attended with pain I have also observed, that the superior extremities are more frequently affected than the inferior, and that the muscles of the hands are remarkably wasted. The dry belly-ach, formerly described, commonly, and especially in painters who make use of turpentine, precedes or accompanies any affections of the limbs.

The patient, even when he quits his business, recovers his health but slowly; first acquiring the power of bending, afterwards of extending the limbs; but there are few instances of a complete recovery till after many months, or even years, and a return of the complaint

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is the almost certain consequence of returning to their former manner of life. The most effectual preservatives are keeping clean, and avoiding, as much as possible, all immediate contact with the metal, its calx or fumes.

§ 3. *Loss of Motion with Contraction of the Parts.**

A woman, aged thirty-one, fell down suddenly whilst walking. She retained her senses, but had violent pains and contractions in the muscles of both arms, which were so strongly bent that all efforts to extend them were ineffectual, and the attempting it only caused more exquisite pain; but though the upper extremities were so greatly, the lower were little affected, and she only complained of a slight pain in one ankle. After ten hours there was no change in her situation; after twenty the pains had somewhat abated, and she could move her arms a little. After thirty hours the pains had entirely ceased, and she could move all her joints easily. In a few days more she recovered the strength of her arms, and in a week, except that she was somewhat low-spirited, had no farther complaint.

A woman, aged twenty-seven, was for several years subject, commonly in cold weather, to fits of coldness and of pain in the external parts of the head, face and neck, and in the muscles within the arch of the lower jaw; during these fits she could not bear the slightest pressure on the parts affected, and the lower jaw was immovably fixed, at first, almost close to the upper one, but afterwards, as the pains diminished, it relaxed so far as to admit the point of

* Under this head I have given three cases, the examples not being sufficiently numerous to enable me to draw up any general history of the complaint.

of the finger between the teeth. In about a month or six weeks the pains ceased, and she perfectly recovered the use of the jaw.

A woman, aged twenty-one, whose history I have in part formerly related*, three weeks after receiving the blow on her chest, was seized with a fit, which returned sometimes every day, though more commonly after an interval of a week, a fortnight, or even a month. When she perceived the approach of the fit, which was preceded by partial muscular contractions, what she called twitchings or catchings, she laid herself on her back in bed, her limbs were immediately stretched out, her fingers and toes strongly drawn in, and her head so much drawn backwards that her face was turned directly to the head of the bed; in this state she remained struggling for a considerable time, her body bent upwards, whilst the crown of her head was forcibly pressed against the bed, her neck and breast were also swelled, and her belly was repeatedly raised forwards; at this time the muscles every where felt rigid; sometimes the head, from the posture above described, was drawn slowly forwards also, from side to side. The eyes were fixed, and not affected by the nearest approach of objects. She frothed at the mouth and frequently bit her tongue, (which was pushed out) from the convulsive contractions of the muscles of the lower jaw. Sometimes she would sing, or make a noise like the barking of a dog, at other times she uttered the most doleful cries, after which the muscles were always soft, the limbs relaxed, and her hands opened; in this situation she used to remain from one to eight hours, and after each fit complained of excessive weariness and pains all over her body. Sometimes her fits were much slighter, some of her limbs only being contracted; and, though she lost her sight, retaining her other senses. During the intervals of the

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fits,

* Vide page 45.

fits, she was troubled with twitchings and tremblings, either of her whole body, of one side, or of a particular limb only, and these were always greatly increased from any fright or flurry. She frequently gnashed her teeth, and sometimes with so much violence when she was drinking, as to break the cup. She also complained of head-ach, giddiness, dimness of sight, lowness of spirits, coldness of her lower extremities, and, sometimes, had cold sweats; her pulse was between eighty and ninety. Her fits remained violent near fourteen months, but became more moderate after the bursting forth of matter from her side, and did not afterwards affect her senses, and in four months after this event took place, they, as well as the concomitant symptoms, disappeared entirely, and have not since, now near four years, in any degree returned.

§ 4. *Perpetual involuntary Motion.*

Most commonly after a fright, sometimes after convulsions, hysterical or fainting fits, and sometimes nothing remarkable having preceded, the patients are seized with a perpetual involuntary motion, but without pain, either of all the limbs and spine, or of both arms, though unequally, or of the arm and leg of one side, or of one arm only, or of the belly and breast, which last motion is much quicker than that of respiration. These motions are sometimes so violent that, when general, the patients cannot lie in bed, and when one arm only is affected, its motion will throw them down, if while walking they happen to be off their guard; by the perpetual rubbing the cuticle is sometimes abraded from the insides of the fingers. These motions sometimes encrease in violence in the evening, and on alternate days, and, when going off intermit in the forenoon. The patients

patients sometimes laugh or cry, are troubled with a hiccough, or smack with the tongue and lips; the tongue is often pushed out very far, and the lower jaw is in perpetual motion; if they happen, as is sometimes the case, to slumber for a little, the parts, during sleep, are at rest. Sometimes they complain of pain in the throat, breast and neck. The speech is commonly affected, but the senses are entire. Both stools and urine are retained longer than is natural. The pulse is small and sometimes quick. By a superior external force the motion of a limb may be stopt for a little, commonly without any inconvenience to the patient; but in one case, when the arm was held, the patient sunk quietly into a fit, as if she had been asleep, the other limbs retaining the posture they happened to be in when the fit began, and when, on letting go the arm, the motions of it returned, the feeling and the power of motion in the other limbs returned also; sometimes the motions of the arms, of their own accord, alternately ceased and returned, and the same consequences followed. The pulse did not vary in the different states. In the same patient the left arm was, without any inconvenience, always at rest when she lay down, and always in motion when she sat upright or stood, the right arm was not affected by change of posture, till her recovery was advanced, and then it was influenced by it in the same manner as the left arm had formerly been.

The subjects of this disorder are women and children. The duration is commonly not longer than one or two months; but sometimes the motions of particular limbs continue for several years, and in one case, where they had been violent, the limb inflamed. Patients are apt to suffer a relapse, especially when the disease originated in a fright.

Does the relief which is afforded during sleep, direct us to the use of opiates?

C H A P. III.

Observations on the Effects of Remedies in Diseases of the Head, &c.

TH E sense of feeling and the power of motion were commonly encreased after the application of blisters to the nape of the neck, or to the arms, when these were the parts affected, and to the os sacrum, when the lower limbs were affected. Liniment. sapon. rubbed on the parts appeared to have a similar effect—After receiving once in three or four days about a dozen of slight shocks of electricity, the sense of feeling was in a few hours, and the power of motion in a few days encreased—After going into a warm bath the pulse rose, and the strength of the limbs was encreased a little. Painters, whose wrists were weak, found some benefit after having repeatedly held their hands and the lower parts of their arms in the warm moist grains of malt. After hot medicines, such as sal. C. C. vol. mustard-seed, horse-raddish-root, gum gauliacum, saffron, and some other sudorifics, a glowing was felt in the affected parts, and was followed by sweating, and, in some cases, when blisters also had been applied, the sense of feeling and power of motion were perfectly restored. After Peruvian bark and steel medicines, tremors and weakness of the limbs were diminished. In regard to the perpetual involuntary motions, the most remarkable relief, or rather almost perfect recovery, happened to a woman, who, having a second time had this disorder:

this disorder constantly in her arms for three years, took musk a little longer than a fortnight, to the quantity first of one drachm, and afterwards to that of one drachm and an half each day; she sweated a little during the course, and was giddy from the encreased dose. Opiates and fetid gums, with salt of hartshorn, seemed also to have in these cases very good effects.

As the diseases hitherto described are principally such as arise from the affections of particular organs, I have been fuller in giving anatomical descriptions than may perhaps be necessary hereafter. And therefore at the closing of this part of my undertaking, I reckon it incumbent upon me to say something of the advantages, which, may be derived from the dissection of morbid bodies.

And here it first occurs, that it must surely give a Physician great satisfaction and pleasure to find, by the appearances, that he has understood a disorder and treated it properly; but this being, a kind of delicate luxury in science, relished only by the most liberal minds, and therefore a superfluity, we must next enquire, whether this modern method of arriving at knowledge, may not be attended with some more solid advantages, advantages really conducive to the health and happiness of mankind.

Though there are many diseases which have not hitherto been in any degree illustrated by dissections, yet the great light which has been thrown upon others, by the accidental dissections of anatomists, ignorant for the most part of the complaints which preceded death, or who learned them only by hearsay, and after the dissections had been performed, is a sufficient earnest of the great encrease in the knowledge of diseases which might be made, were Physicians, who have known the complaints, to examine more minutely

minutely and attentively than they commonly do, the bodies of the dead. A person who has carefully performed, or even attended to the dissection of one case, will afterwards look upon similar cases with a more piercing eye than before; for as symptoms suggest to the mind the ideas of certain changes in the body, so, on the other hand, the observation of certain changes in the body suggests the ideas of certain symptoms connected with them, which, though necessary to a full knowledge of the disease, would otherwise escape the notice of the Physician.

Dissections have also led to several useful and necessary methods of treating diseases, which were formerly unknown, and have, likewise, shewn the inutility and impropriety of many common methods of practice. They tend more than any thing whatever to shew the insignificancy and the futility of many highly and long applauded remedies, and thus the mind being set at liberty from a slavish implicit faith in their efficacy, its powers may be directed to more worthy objects.

If, therefore, by dissections, in the performing of which, diseases were frequently only a secondary object, so great a progress has been made in the knowledge, and in the treatment of them, let those who wish to promote the great interest of mankind, avoid joining themselves to the lazy tribe of despondents, who assert that Physick cannot be improved, and who, on that pretence, give way to their innate love of indolence and sloth. Let the generous few rather hope, nay, let them be assured, that by their united and continued efforts, the knowledge of diseases may be very highly and essentially promoted.

EXPERIMENTS

ON

VARIOUS SUBJECTS.

E X P E R I M E N T S

D I E T.

I N T R O D U C T I O N.

ALTHOUGH air is more immediately necessary to life than food, the knowledge of the latter seems of more importance; it admits certainly of greater variety, and a choice is more frequently in our power. A very spare and simple diet has commonly been recommended as most conducive to health, but it would be more beneficial to mankind if we could shew them that a pleasant and varied diet was equally consistent with health as the very strict regimen of Cornaro, or the Miller of Essex. These and other abstemious people, who, having experienced the greatest extremities of bad health, were driven to temperance as their last resource, may run out in praises of a simple diet, but the probability is, that nothing but the dread of former sufferings, could have given them resolution to persevere in so strict a course of abstinence; which, persons who are in

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health,

health, and have no such apprehension, could not be induced to undertake, or, if they did, would not long continue.

In all cases great allowance must be made for the weakness of human nature; the desires and appetites of mankind must, to a certain degree, be gratified, and the man, that wishes to be most useful, will imitate the indulgent parent who, whilst he endeavours to promote the true interests of his children, allows them the full enjoyment of all those innocent pleasures which they take delight in. If possibly it could be pointed out to mankind that some articles used as food were hurtful, whilst others were in their nature innocent, and that the latter were numerous, various and pleasant, they might, perhaps, from a regard to their health, be induced to forego those which were hurtful, and confine themselves to those which were innocent. To establish such a distinction as this, from experiment and observation, is the chief object of my enquiry: and I confess it will afford me a singular pleasure if I can prove, by experiment, that a pleasant and varied diet is equally conducive to health, with a more strict and simple one; at the same time I shall endeavour to keep my mind unbiassed in my search after truth, and, if a simple diet seems the most healthy, I shall not hesitate to declare it.

But before entering upon the present, or any other investigation, it may not be improper to attend to a distinction, made by my Lord Bacon, between useful and curious knowledge; the latter, indeed, or *Experimenta lucifera*, he recommends, as nearly of equal importance with the former, or *Experimenta fructifera*, though to me they appear widely different. The only test of the utility of knowledge is, its promoting the happiness of mankind; which, though

though the *Experimenta lucifera* may do at some future period, the *Experimenta fructifera*, as having directly and immediately this effect, are surely to be preferred; and, therefore, though I admit that all knowledge is desirable, from the pleasure it affords, yet, considering the shortness of human life, and the very narrow limits of human abilities, and considering also that there are many things still unknown which might be of advantage to society, it may be doubted whether every person be not in strict duty bound to direct his whole attention to the cultivation of useful knowledge.

In the course of the present enquiry, I have sometimes doubted whether an accurate attention to the discharges of the body be not more a matter of curiosity than of use; and, if our attention should not be chiefly directed to observe the different effects of food on the body; whether, for instance, it agrees or disagrees with the stomach, is more or less nourishing, has the quality of invigorating, or of occasioning laziness and inactivity, if it enlivens or deadens the faculties, and if it creates or allays the several appetites and desires.

If after what I have said, I shall be thought to have indulged myself with attending too accurately to the discharges of the body, it must be partly imputed to my desire to avoid the appearance of entertaining a doubt, that what some of the first names in Physic have thought deserving their attention were things of little moment.

Dr. Stark, before he began his Experiments on Diet, had collected some facts on the subject, and had made some observations relative to digestion, which I have introduced in this place, imagining that they would not be unacceptable to the public.

Facts relative to Diet.

Dr. B. Franklin, of Philadelphia, informed me, that he himself, when a journeyman Printer, lived a fortnight on bread and water, at the rate of 10 lb of bread *per* week, and that he found himself stout and hearty with this diet.

He likewise told me, that he knew a Gentleman, who, having been taken by the Barbary Corsairs, was employed to work in the quarries, and that the only food allowed him was barley, a certain quantity of which was put into his pockets every morning; water he found at the place of labour; his practice was, to eat a little now and then, whilst at work, and, having remained many years in slavery, he had acquired so far the habit of eating frequently and little at a time, that when he returned home his only food was gingerbread-nuts, which he carried in his pocket, and of which he eat from time to time.

By Sir John Pringle I was told, that the inhabitants of Zephallonia, during some parts of the year, live wholly on currants. He also

also said, that he knew a Lady, now ninety years of age, who eat only the pure fat of meat.

I learned from Dr. Mackenzie, that many of the poor people near Inverness, never took any kind of animal food, not even eggs, cheese, butter or milk.

Mr. Hewson informed me, that Mr. Orred, a Surgeon at Chester, knew a ship's crew, who being detained at Sea after all their provisions were consumed, lived, one part of them on tobacco, the other on sugar: and that the latter generally died of the scurvy, whilst the former remained free from this disease, or soon recovered.

Dr. Cirelli says, that the Neapolitan Physicians frequently allow their patients, in fevers, nothing but water for forty days together.

Mr. Slingsby has lived many years on bread, milk and vegetables, without animal food or wine: he has excellent spirits, is very vigorous, and has been free from the gout ever since he began this regimen.

Dr. Knight has lived also many years on a diet strictly vegetable, excepting eggs in puddings, milk with his tea and chocolate, and butter—He finds wine necessary to him—Since he lived in this manner he has been free from the gout.

Observations

Observations on Digestion.

A woman, who was in the practice of dram-drinking, after taking an emetic, vomited many pieces of fat, some pieces of gristle, and only one very small bit of the lean of veal, which she had eat twenty-four hours before. She brought up, likewise, a bit of apple, and some pieces of the skins of roasted apples which she had eat twenty hours before. Also part of a brown crust of bread which she had eat about three hours before.

A young man, ill of a fever, having taken an emetic, vomited some fat broth, with bits of bread, which he had eat three hours before.

A young man, who had been slightly indisposed about a week, after taking an emetic, brought up some mutton, which he had eat three hours before, and nearly in the same state in which he eat it.

A girl, in a fever, vomited spontaneously, and brought off her stomach some fish, which she had eat three hours before.

A man, with purging, head-ach, &c. brought off his stomach, by an emetic, some very disagreeable bitter stuff, but without any appearance of bread and butter, of which he had eaten very heartily about seven hours before.

A girl, subject to fits, after taking an emetic, vomited some oysters, which she had eat three hours before, but there was no appearance of veal, which she had eat twenty-seven hours before.

A girl,

A girl, subject to pains in her stomach, after taking an emetic, vomited many pieces of the skin, but scarcely any of the lean of roasted veal, which she had eaten six hours before.

A woman, with a tertian fever, head-ach, &c. after taking an emetic, brought up some mutton, very little altered. She had not eat it long before.

Mrs. I—m informed me, that her son, a little boy, and her daughter, a delicate girl, vomited, one morning, some beef, which they had eat at dinner, between three and four o'clock the preceding day.

ABSTRACT

ABSTRACT of a JOURNAL kept during a Course of Experiments on Diet.

N. B. The weight of the solid food and stools, is marked in Troy weight, that of the body in Avoirdupois; the quantity of liquids was determined by wine measure—The weight of my body, dressed in my usual clothes, at the beginning of these Experiments was, 12ft. 3lb. or 171lb. Avoirdupois.

E X P E R I M E N T I.

Diet of Bread and Water.

Second Period, from the 24th of June to the 13th of July.	State of the atmosphere during the period.	Daily allowance of food	Daily loss of weight.	Number and total weight of stools.	Weight of my body at the end of the period.
	o	Bread 20 oz. Water 4 lb.	5 oz. 5 dr.	5 stools, weighing 7 oz. 5 dr.	11 ft. 12 lb. 8 oz.
Second Period, from the 24th of June to the 13th of July.	Thermometer from 60 to 70. Weather commonly serene, sometimes cloudy, feldom rain.	Bread, 30 oz. Water, 2 lb.	6 oz. 10 dr.	7 stools, weighing 10 oz. 5 dr.	11 ft. 10 lb. 8 oz.

Third

Third period, from the 13th to the 19th of July.	State of the atmosphere during the period. Thermometer from 60 to 73. Often serene, sometimes cloudy.	Daily allowance of food. Bread, 30 oz. Water, 2 lb.	Daily loss of weight. 6 oz. 10 dr.	Number and total weight of stools. 1 stool, weighing 2 oz. 5 dr.	Weight of my body at the end of the period. 11 ft. 7 lb. 8 oz.
Fourth period, from the 19th to the 26th of July.	Thermometer from 63 to 66. Commonly cloudy, sometimes rain, sometimes serene.	Bread, 38 oz. Water, 3 lb. 8 oz.	Daily gain in weight. 3 oz. 6 dr.	3 stools, weighing 2 lb. 1 oz. 3 dr.	11 ft. 9 oz. 8 dr.

R E M A R K S.

To determine how long the food is usually retained in the body, I repeatedly swallowed mustard or carraway-seeds and observed, that when coctive, they did not pass with the first, but with the second and third stool; and, commonly, after thirty-six or forty-eight hours; when open in the body, they came away with the first stool, the next morning.

Before I began regularly this Course of Experiments, I had, for several weeks been, now and then, making trial of it; sometimes, instead of water, I took, in the morning, a weak infusion of tea,

O

sassafras,

affafras, or of some herb, but without milk or sugar. My stools were of a smooth consistence and slimy surface, like clay.

Although upon the allowance of twenty ounces of bread, I was hearty, in good spirits, and had some desires, yet I found it necessary to encrease it, not only as I fell away, but because I was often very hungry.

On the allowance of thirty ounces, I sometimes, immediately after eating, had a little wind upwards, and sometimes, though rarely, a little downwards. My stools were gradually softer. I still fell away very visibly; had hardly any desires, though hearty in other respects. Sometimes I felt a slight sickishness and want of appetite, which went off after eating a bit of bread.

Imagining that the sickness might be owing to my taking an over proportion of liquid, I endeavoured, during the third period, to ascertain how much liquid was absolutely necessary to the quantity of bread I eat, and found, that though I could easily eat my common meal of ten ounces, without any liquid, and was not at all thirsty, even for some time after, yet in two or three hours, an intolerable thirst came on, which could not be allayed by less than ten ounces of liquid.

I likewise found that when I drank less than two pints a day I was thirsty in the evening, and had a slight pain in my stomach. formerly I used to make eleven or twelve ounces of urine at a time, but now five or six ounces brought on the inclination, and my water was high coloured. During the third period I was one day irregular, having ate about four ounces of meat, and drank two or three glasses of wine. At the conclusion of it,
I was

I was perfectly hearty, my head clear, often hungry, but never had any desires.

When I eat thirty-eight ounces of bread (the allowance during the fourth period) at five or six times, my appetite was not more than satisfied, but if I made fewer meals I found my appetite fatiated.

I sometimes varied my daily quantity of bread, by taking from the allowance of one day and adding to that of the day following, but I found that the most I could eat in one day was forty-six ounces, and that the greatest quantity I could eat at one time, without uneasiness, was twenty ounces ; that the sensation of hunger began four hours after eating this quantity, when I could eat twenty ounces more. I once forced myself, to eat, at one meal, in an hour and ten minutes, thirty ounces of bread, I brought up some wind off my stomach whilst I was eating it, had afterwards much noise in my bowels, and in a few hours a bolar stool, weighing one pound ; I continued uneasy during the whole of the evening, but was quite well and hungry next morning. During this last period I sometimes had desires (Venus bis) but never before, since I began this Course of Experiments.

By Experiment, I determined, the quantity of saliva secreted in half an hour, to be whilst the parts were at rest, four drachms, whilst eating, five ounces four drachms:

E X P E R I M E N T II.

Diet of Bread and Water with Sugar.

First period, from the 26th of July, to the 3d of August.	State of the atmosphere during the period.	Daily allowance of food	Daily gain of weight.	Number and total weight of stools.	Weight of my body at the end of the period.
	Thermometer from 62 to 66. Weather commonly cloudy.	Bread 34 oz. Sugar 4 oz. Water 3½ lb.	2 oz.	Purging.	11 ft. 10 lb. 8 oz.
Second period, from the 3d to the 9th of August.	Thermometer from 64 to 74. Weather commonly serene.	Bread, 30 oz. Sugar 8 oz. Water, 3½ lb.	Weight of the body stationary.	2 stools, weighing 10 oz. 4 dr.	11 ft. 10 lb. 8 oz.
Third period, from the 9th to the 14th of August.	Thermometer from 63 to 66. Weather serene, sometimes rain.	Diet irregular.	Daily loss of weight 1 lb.	Purging.	11 ft. 6 lb.

Fourth period, from the 14th to the 19th of August.	State of the atmosphere during the period.	Daily allowance of food.	Daily gain of weight.	Number and total weight of stools.	Weight of my body at the end of the period.
	Thermometer from 61 to 63. Serene weather, sometimes rain.	Bread 26 oz. Water 2 lb. 5 oz.	Nearly 3 oz.	Purging.	11 ft. 7 lb.
Fifth period, from the 19th to the 24th of August.	Thermometer from 59 to 61. Weather serene, sometimes rain.	Diet irregular.	Weight of the body stationary.	1 loose stool.	11 ft. 7 lb.

R E M A R K S.

Sugar seemed to increase the flow of saliva into the mouth, for with sugar I could eat more bread at a time, than I could possibly do without this addition.

In the afternoon of the first day after using sugar I passed a good deal of fetid wind downwards, and early next morning had a liquid stool. I had afterwards three loose stools, weighing one pound five ounces; weak desires, (Venus femel) during the first period.

After I began to use sugar with my bread, I found that a smaller quantity of liquid prevented thirst than when I eat bread alone.

alone. With my present diet, of thirty ounces of bread, and eight ounces of sugar, two pints of liquid a day are sufficient to allay my thirst; whereas, when I ate thirty-eight ounces of bread, without sugar, I found that three pints and a half of liquid were absolutely necessary.

I commonly ate eight ounces of sugar at a meal, without any inconvenience, and became hungry three hours after it; my appetite was not at all cloyed with the sugar. I passed hardly any wind either way, and never had any desires.

On the 10th I ate, at three different times, before one o'clock, twenty ounces of sugar, and, though I ate the last of it with reluctance, and was sickish after it, yet it did not satisfy my appetite. At two o'clock I became very hungry, and at three began to eat bread with great pleasure, and ate twenty ounces of it, drinking two pints and a half of water, which I found sufficient to allay my thirst.

On the 11th I ate twenty-four ounces of bread, and sixteen ounces of sugar, but the last part of it with great abhorrence. I now perceived small ulcers on the inside of my cheeks, particularly near a bad tooth, in the lower jaw, of the right side; the gums of the upper jaw, of the same side, were swelled and red, and bled when pressed with the finger, the right nostril was also internally red or purple, and very painful. I had one thin stool.

On the 12th I ate thirty ounces of bread, with ten of sugar, had little appetite for supper, and after it a thin stool.

The

On the 13th, having been extremely ill, during the night, with pains in my bowels and sweating; at day-break, I had a large thin stool, and two liquid stools afterwards, but passed no wind, nor was troubled with any in my bowels. I had no appetite for breakfast, could not taste sugar, dined on a few ounces of meat, with about twelve ounces of bread, and drank two or three glasses of wine.

On the 14th I perceived several small purple streaks on my right shoulder, but the sores in the inside of my mouth, and my gums were better, and my nostril less painful.

On the 15th the affection of my gums, though less in degree, had become more general, having spread to the left side, their semilunar edges were of a deep red, and several drops of blood issued from my right nostril.

N.B. Until the 18th I had, every day, three or four liquid stools, containing some clear gelatinous substance, and felt but little pain or wind in my bowels—on the 18th and 19th I had one stool each day.

On the 18th, some part of the gums of both jaws, and on both sides, were red and swelled, but none of them of that purple colour, nor so apt to bleed as some days ago, the sores in my mouth were healing, and the streaks on my shoulder almost gone. I never had the smallest desires.

From the 19th to the 24th, my food was thirty ounces of bread with three pints of water every day, excepting on the 22d, when
I dined

I dined heartily on meat and fruit, and drank some wine. Venus
femel.

N. B. On the 21st I made an experiment with two drachms of
faces, of a pilular consistence, which I had voided, after having lived
about a week on bread and water; they were washed four or five
times in about six ounces of water, which was thereby rendered
milky; but after standing ten or twelve days, and depositing a se-
diment, it became again almost transparent; the residuum, saved
on the filtering paper, weighed one scruple and half a grain, was
of a darkish green colour, and perfectly inodorous—Bread, treated
in a similar manner, occasioned no milkiness, and the water, instead
of becoming putrid, was converted into a weak vinous liquor.

EXPERIMENT

E X P E R I M E N T III.

Diet of Bread and Water with Oil of Olives.

First period, from the 24th to the 30th of August.	State of the atmosphere during the period.	Daily allowance of food	Daily gain or loss of weight.	Number and total weight of stools.	Weight of my body at the end of the period.
	Thermometer from 59 to 62. Weather serene, sometimes rainy.	Bread 30 oz. Oil of Olives 2½ oz Water 3 lb.	Gained nearly 5 oz. 3 dr.	2 stools, weighing 1 lb. 4 oz. 6 dr.	11 ft. 9 lb.
Second period, from 30th of August to the 5th of September.	Thermometer from 63 to 64. Weather serene or cloudy.	Bread, 30 oz. Water, 3 lb.	Lost nearly 9 oz. 3 dr.	1 stool, weighing 4 oz. 4 dr.	11 ft. 5 lb. 8 oz.
Third period, from the 5th to the 13th of September.	Thermometer from 57 to 66. Weather commonly rainy.	Diet irregular.	0	Purging.	11 ft. 13 lb. 8 oz.

R E M A R K S.

Two ounces of oil, taken at one meal, was so large a quantity as to be disagreeable; three ounces in the day occasioned some uneasiness in my bowels; and four ounces griped me very much—I had now and then some wind upwards, and sometimes, after being a little griped, passed some downwards; my appetite was sufficiently satisfied; I was sometimes a little thirsty, and frequently had desires in the night.

On the 23d of August, a large double tooth, which had been very troublesome to me, during the time, and even after the sugar diet, was extracted from the lower jaw; the day following I had great pain in the part from whence the tooth was taken, and the gum appeared somewhat black.

The second night I had no sleep from the excessive pain, and an abominably putrid slough was formed. The gums in the neighbourhood of the sore swelled more than ever and became in part livid, with a fetid white stuff round their edges, whilst the gums immediately over the sore were black and insensible. My appetite was keen, notwithstanding this complaint in my mouth, and was not satisfied until the 5th of September, when I lost it entirely, and became dull, I never had any wind in my stomach, and seldom in my bowels. No desires. I commonly kept some powder of bark on the sore, and washed it frequently with diluted vinegar.

On the 5th of September the slough was smooother, not so fetid or disagreeable, but the affection of the gums was more general, and some of them a little eroded.

On the 6th I had a loose stool in the morning, little or no appetite.

On the 7th, still no appetite, I had five loose stools, with griping and wind, and the stools partly consisted of a kind of gelatinous matter. On going to bed in the evening I was seized with coldness and shivering, had fourteen watery stools in the night, with great pain and wind in my bowels, &c.

On the 8th I was so weak and low that I almost fainted in walking across my room; had four or five loose stools in the course of the day, was sick, and my tongue foul. Having taken fifteen grains of ipecacuanha, I vomited, first a clear liquor, of the colour of Burgundy, afterwards a brown and extremely bitter liquor. In the evening I observed that the slough on the fore, and some parts of the gums had become black, whilst the gums of the upper jaw, opposite the fore, were swelled, so as almost to reach the extremity of the eye-tooth; and I spat, in considerable quantity, a very disagreeable, fetid, yellowish fluid. I took half an ounce of the extract of the bark, and had three stools, but they were not so thin as before.

On the 9th, although I was much better, my pulse was still very low, and I was apt to faint whenever I got out of bed; some black sloughs were separated from the gums, which now put on a more favourable appearance. The eminences or papillæ, which to me are natural on the inside of my legs and thighs, were red or

purple, and the discolouration of the skin spread beyond the eminencies; there were also a few light brown spots on several parts of my lower extremities. I took an ounce and an half of the extract of bark, with some mulled Port wine, which had no very sensible effect; but I found myself greatly revived by a basin of mutton broth, which was almost the first food I had taken since the 5th; I had two soft stools. I continued to take the bark for a few days longer, and lived freely on animal food, milk and wine, until the 18th; when I felt myself quite recovered.

EXPERIMENT

E X P E R I M E N T I V.

Diet of Bread and Water, with Milk.

First period, from the 18th to the 22d of September.	State of the atmosphere during the period.	Daily allowance of food.	Daily gain of weight.	Number and total weight of stools.	Weight of my body at the end of the period.
	Thermometer from 57 to 62. Weather serene,	Bread, 30 oz. Water, 3 lb. Milk, 4 lb.	2 oz.	4 stools, weighing 3 lb. 10 oz.	12 ft.
Second period, from the 22d to the 26th of September.	Thermometer from 55 to 57. Weather cloudy or serene.	Bread, 30 oz. Water, 3 lb. Milk, 4 lb.	2 oz.	2 stools, weighing 1 lb. 4 dr.	12 ft. 8 oz.
Third period, from the 26th to the 29th of September.	Thermometer from 55 to 59. Weather rainy, or serene.	Bread 30 oz. Water 3 lb.	Daily loss of weight. 10 oz. 5 dr.	2 stools, weighing 5 oz. 4 dr.	11 ft. 12 lb. 8 oz.
Fourth period, from the 29th of September to the 2d of Oct.	Thermometer 54 or 55. Weather serene, cloudy, or rain.	Diet irregular.	—	—	12 ft.

R E M A R K S.

By the 18th of September the sore in that part of the gums from which the bad tooth had been extracted, was perfectly healed; and the gums, though still a little swelled, were daily getting better. My stools were commonly soft, and of a buff colour; I was sometimes a good deal griped. (Venus bis.)

From the 22d to the 26th my stools were very hard, forced off with great difficulty and pain, and were covered with blood; I was quite stout and hearty, and had, sometimes, desires.

On the 29th although the gums were not to appearance worse, yet I frequently sucked blood from them, and my finger, after touching them, had an offensive smell; what I spit was yellowish and fetid. I had observed none of these symptoms before, since my severe illness.

From the 29th of September to the 2d of October, I lived rather highly, on animal food, and, from being costive, I became loose in my body. The bleeding of the gums was less perceptible, and they had now no offensive smell. (Venus semel.)

EXPERIMENT

E X P E R I M E N T V.

Diet, Bread and Water, with roasted Goose.

First period, from the 2d to the 6th of October.	State of the atmosphere during the period. Thermometer from 47 to 52. Weather cloudy or rain.	Daily allowance of food. Bread, 30 oz. Roasted Goose, 6 oz. Water, 3 lb.	Daily loss of Weight. 4 oz.	Number and total weight of stools. 1 stool, weighing 9 oz. 6 dr.	Weight of my body at the end of the period. 11 ft. 13 oz.
Second period, from the 6th to the 10th of October.	Thermometer Weather commonly serene.	Bread, 30 oz. Roasted Goose, 6 oz. Water 3 lb.	Daily gain in weight. 3 oz.	Loose stools.	11 ft. 13 lb. 12 oz.
Third period, from the 10th to the 14th of October.	Thermometer about 50. Weather serene.	Bread, 30 oz. Roasted Goose, 6 oz. Water 3 lb.	Daily loss of weight. 3 oz.	Loose stools.	11 ft. 13 lb.

Fourth period, from the 14th to the 19th of October.	State of the atmosphere during the period. Thermometer about 50. Weather serene.	Daily allowance of food. Irregular.	Daily loss of weight. 3 oz.	Number and total weight of stools. Loose stools.	Weight of my body at the end of the period. 12 ft. 11 lb. 4 oz.
Fifth period, from the 19th to the 21st of October.	Thermometer 56. Weather cloudy.	Bread, 30 oz. Roasted Goose, 8 oz. Water 3 lb.	Daily gain of weight.	2 loose stools.	12 ft. 1 lb. 8 oz.

R E M A R K S.

I had sucked blood from my gums till the 3d of October, but none afterwards; the swelling of the gums of the upper jaw had subsided, and they seemed to be quite well, whilst those of the lower jaw were daily mending; in every respect I was hearty and vigorous both in body and mind. (Venus ter.)

On the 7th, I had a head-ach, and little appetite for food. One loose stool.

On the 8th, had two loose stools; my gums were rather worse, and I brought away a little blood by sucking them.

Between

Between the 10th and 14th had two liquid stools; my gums quite well. (Venus bis.)

From the 14th to the 19th, lived freely on animal food.

From the 19th to the 21st, was sometimes a little thirsty, and my appetite was rather more than satisfied; violent desires; passed a good deal of wind downwards. (Venus bis.)

Q. 15. 1. 1. EXPERIMENT

E X P E R I M E N T VI.

Diet of Bread and Water, with boiled Beef.

First period, from the 21st to the 24th of October.	State of the atmosphere during the period.	Daily allowance of food.	Weight of my body stationary.	Number and total weight of stools.	Weight of my body at the end of the period.
	Thermometer from 47 to 54. Weather serene or cloudy.	Bread, 30 oz. Boiled Beef, 6 oz. Water, 3 lb.		1 stool, weighing 4 oz. 5 dr.	12 ft. 1 lb. 8 oz.
Second period, from the 24th to the 28th of October.		Bread, 30 oz. Boiled Beef, 4 oz. Water, 3 lb.		2 soft stools, weighing 9 oz. 12 dr.	12 ft. 8 oz.

R E M A R K S.

Of the beef, nearly a third part was fat. I found six ounces too much for one meal, and therefore I divided it into two. (Venus bis.)

Upon the allowance of four ounces, I did not find my appetite sufficiently satisfied, although I passed less wind downwards than when I ate the six ounces. I was never in the least heavy or dull after any meal; had no venereal desires, but a keenness for study. I sometimes infused some flowers of lavender, or rosemary, in the water I used, but found nothing so agreeable as green tea.

A REPETITION

A REPETITION OF EXPERIMENT II.

Diet of Bread and Water with Sugar.

First period, October 28, 29, 30.	State of the atmosphere during the period. Thermometer from 48 to 52. Weather cloudy, with much rain.	Daily allowance of food Bread, 30 oz. Loaf Sugar, 6 oz. Water, 3 lb.	Number and total weight of stools. 2 firm stools, weighing 6 oz. 9 dr.	Loss of weight at the end of the period. 1 lb.
Second period, October 31, November 1.	Thermometer from 53 to 55. Weather rainy.	Bread, 30 oz. Loaf Sugar, 6 oz. Water, 3 lb.	1 very firm stool, weighing 3 oz. 5 dr.	Encrease of weight at the end of the period. 1 lb.

R E M A R K S.

Being now in perfect health, and my gums apparently sound, I thought it a proper time to ascertain, by experiment, whether the affection of my gums, and the other complaints with which I had formerly been attacked, were occasioned by sugar, or were owing to my having persevered too long in a diet of bread and water.

On the 28th, I brought up a good deal of wind off my stomach, after each meal; on the 29th a little; but on the 30th none. I passed scarcely any downwards, and what I did pass, was much less fetid than when I lived on beef. My appetite was sufficiently satisfied, and, excepting on the first day, that I perceived a little clamminess in my mouth, I was not in the least thirsty.

During the second period, or the two last days, there happened a great irregularity in my weight, for which, not having attended to the quantity of my urine or perspiration, I can assign no reason. My weight was encreased 1 lb the first day, and was lessened 2 lb the next. My appetite was hardly satisfied; I was never thirsty. I passed a little wind downwards, not at all fetid. I had no desires. My gums were not in the least affected.

A REPETITION of EXPERIMENT VI.

Diet of Bread, with boiled Beef, and Water.

Period. November 2, 3, 4, 5, 6, 7.	State of the atmosphere during the period.	Daily allowance of food.	Number and total weight of stools.	Increase of weight at the end of the period.
	Thermometer from 53 to 55. Weather rainy and cloudy, seldom serene.	Bread, 30 oz. Boiled Beef, $\frac{1}{4}$ part of which was fat, 6 oz. Water, 3 lb.	4 pretty firm stools, weighing 1 lb. 1 oz. 3 dr.	1 lb. 8 oz.

R E M A R K S.

On the first day of this period I brought off a little wind from my stomach, and was somewhat griped, with noise in my bowels. In the evening, and during the night, I passed a vast deal of wind downwards.

On the second day I was less troubled with wind, and on the third and following days hardly at all. My appetite was not perfectly satisfied, but my spirits were somewhat raised on the first day, and afterwards continued better than when I lived on sugar.

On the third day of this period I began to have desires, which were considerable in the night.

On the fifth day, Venus semel. Having every day, during this period, paid particular attention to the weight of the body, I observed that the principal increase of weight was on the three last days.

EXPERIMENT

E X P E R I M E N T. VII†.

Diet of Bread, with only the lean Part of boiled Beef, and Water.

First period, three days, Nov. 8, 9, 10.	State of the atmosphere during the period.	Daily allowance of food.	Number and total weight of stools.	Loss of weight at the end of the period.
	Thermometer from 49 to 54. Weather rainy and cloudy the 2 first days; the last it was serene.	Bread, 20 oz. The lean of boiled beef, 12 oz. Water, 3 lb.	1 stool, weighing 1 lb. 6 oz.	3 lb.
Second period, three days, November 11, 12, 13.				
	Thermometer from 45 to 47. Weather fair the 2 first days; rainy the last.	Bread, 1 lb. The lean of boiled beef, 1 lb. Water, 3 lb.	1 large thin stool on the morning of the 11th	1 lb.
Third period, three days, November 14, 15, 16.				
	Thermometer 43. Weather serene the two first days, cloudy the last.	Bread, 9 oz. The lean of *stewed beef, 18 oz. Water, 3 lb.	5 thin stools, weighing about 1 lb.	3 lb.

† From this time I made use of the Avoirdupois weight only.

* Although the beef is said to have been stewed during the third period, this circumstance does not seem to me to make any alteration in the Experiment, as Dr. Stark did not use the gravy, and his meat was but badly cooked.

R E M A R K S.

R E M A R K S.

My appetite was by no means satisfied during either the first or second period. I scarcely passed any wind either way. My sleep was somewhat disturbed by dreams. I had strong desires. (Venus bis)

On the first day of the last period, before I was attacked with the purging, my appetite was hardly satisfied with a meal, consisting of eight or ten ounces of beef, and about half as much bread—I became hungry a few hours afterwards, had frightful dreams in the night, and awoke several times with palpitation at the heart.

Having observed some pieces of the beef pass through me undigested, I imagined that the purging was owing to the beef I had ate, being tough and badly dressed; for I had not yet learnt the time that was necessary to prepare it properly.

By repeated trials I found, that six or seven hours of the boiling heat was necessary to make the beef tender; that by this time one third of the meat which was put into the inner pan, without any water, was gravy, or a fluid, which congealed on cooling, whilst two-thirds only remained solid. In preparing several pounds of meat at a time, there was only the loss of a few drachms in the weight, which, I imagine, was chiefly air, as I observed many air-bubbles to arise through the gravy. Finding it impossible to separate entirely, all the fat from the lean, when
raw,

raw, the oil which rose to the surface in preparing the beef, was, when cold, carefully removed.

N. B. Dr. Stark, during the two first periods of this Experiment, had the boiled beef from an eating-house, but for the last three days it was dressed at home, in a close vessel, of which he gives the following description. "The vessel in which the beef was cooked, and which I employed afterwards in preparing all my food, was a tin pan, of a cylindrical form, about three inches in diameter, and capable of containing about three pints and a half, wine measure; this pan had a close cover, and was suspended in another of the same shape, about two inches deeper and wider; the intermediate space being filled with water, before the vessel was put on the fire; the inner pan was, by this means, a kind of oven or balneum Mariae, in which the heat was always equal, and the air excluded."

EXPERIMENT

E X P E R I M E N T VIII.

Diet, stewed Lean of Beef, with the Gravy and Water,

Period, four days, November 17, 18, 19, 20.	State of the atmosphere during the period.	Daily allowance of food.	Number and total weight of stools.	Loss of weight at the end of the period.
	Thermometer from 39 to 40. Weather, for the first days serene or cloudy, on the last rainy.	Stewed beef, 20 oz. besides the gravy. Water 3 lb.	1 soft stool on the 19th weighing 3 oz. 7 dr.	2 lb.

R E M A R K S.

In two or three hours after a meal of ten or twelve ounces of meat with its gravy, I became hungry, and was particularly so every night at bed-time. I never had any wind in my stomach, and very seldom passed any downwards. My spirits, at all times very good, were somewhat raised after each meal; but my sleep was every night disturbed by dreams, a circumstance which was new to me. I commonly awoke very early in the morning, and found myself lively and well refreshed: and although I had not slept my usual time, I was never drowsy of an evening. I had sometimes weak desires at the beginning of this period, but none afterwards. My stools resembled in colour, the rust of iron.

N. B. I tried at this time to lessen my usual allowance of water, an experiment which I had sometimes made before, but I found that it could not be done without occasioning great thirst.

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E X P E R I M E N T

E X P E R I M E N T IX.

Diet, stewed Lean of Beef with the Gravy, Oil of Fat or Suet, and Water.

First period, three days, November, 21, 22, 23.	State of the atmosphere during the period.	Daily allowance of food.	Number and total weight of stools.	Loss of weight at the end of the period.
	Thermometer from 43 to 46. Weather variable, the 22d rainy.	Stewed beef, 20 oz. besides the gravy, Oil of fat, 7 oz. Water 3 lb. 4 oz.	1 loose stool, weighing 10 oz. 7 dr.	1 lb. 2 oz. 8 dr.
Second Period, November 24.	Thermometer 43. Weather cloudy, with rain.	Stewed beef, 20 oz. Oil of fat, 9 oz. Water 3 lb.	2 loose stools, weighing 1 lb.	1 lb. 1 oz.
Third period, November 25.	Thermometer 48. Weather cloudy, with rain.	Stewed beef, 24 oz. Oil of suet, 1 oz. Water, 3 lb.	1 thin stool, weighing 8 oz. 8 dr.	7 oz.

REMARKS.

R E M A R K S.

Having already ascertained the nutritious quality of olive or vegetable oil, joined with bread, I was desirous of trying if animal oil, when taken with the lean part of meat would have a similar effect. The first day I took only four ounces of oil, obtained from the common, or outside fat. The second day I took six ounces, and the third day I took ten ounces of oil procured from suet. It did not disagree with my stomach, although it was not intimately mixed with the soup*, but floated on the surface of it—I, however, had some wind in my stomach; and, being thirsty, was obliged to encrease my usual quantity of water.—I slept longer, and more quietly than formerly, and was more disposed to be drowsy than when I lived on the lean of meat only.

N. B. I found that of beef suet, seven-eighths was pure oil or tallow, whereas the common, or outside fat, did not yield above two-thirds of oil, one-third being mucilage or cellular substance. The mucilage dissolved readily in water, and formed a jelly with it, but both mucilage and cellular substance, when separated from the oil, were extremely offensive to the smell and taste.

* Dr. Stark's soup was a little warm water, added to the gravy of the meat.

R₂

EXPERIMENT

E X P E R I M E N T X.

Diet of Flour, Oil of Suet, Water and Salt.

First period, five days, Nov. 26, 27, 28, 29, 30.	State of the atmosphere during the period. Thermometer from 45 to 48. Weather, much rain on the 26th, the other days serene or cloudy.	Daily allowance of food. Flour, 20 oz. Oil of suet, 6 oz. Water, 4 lb. Salt, 12 dr.	Discharges by stool and urine. 2 soft stools, weighing 9 oz. 12 dr.	Encrease of weight at the end of the period. 7 lb. 15 oz. 13 dr.
Second period, two days, December 1, 2.	Thermometer 45 and 43. Weather serene, or cloudy.	Food as above.	Urine, 5 lb. 13 oz. 2 soft stools, weighing 1 lb. 10 oz.	Loss of weight, 3 lb. 14 oz. 13 dr.
Third period, December 3.	Thermometer 42. Weather cloudy.	No food.	Urine, 3 lb. 15 oz.	Loss of weight 3 lb. 7 oz. 10 dr.
Fourth period, five days, December 4, 5, 6, 7, 8.	Thermometer from 41 to 44. Weather serene, or cloudy, rain on the 6th.	Flour, 20 oz. Oil of Suet, 4 oz. Water, 4 lb. Salt, 12 dr.	Urine, 10 lb. 4 oz. 2 soft stools, weighing 1 lb. 7 oz. 5 dr.	Encrease of weight 4 lb. 11 oz. 6 dr.

REMARKS.

R E M A R K S.

I began the preceding Experiment with a view of comparing the nutritious and other qualities of flour with those of the lean of meat. The quantity of tallow used in both Experiments was nearly the same, the quantity of water was regulated by the thirst, and varied from $3\frac{1}{2}$ lb to $4\frac{1}{2}$ lb. In this last Experiment, the tallow and flour were intimately united, being made into a pudding, with twelve and sometimes twenty ounces of water, the allowance of water used as drink being lessened in proportion. On this diet my appetite was sufficiently satisfied, I was easy in my bowels and slept very quietly. I observed, however, that the quantity of fat was too great, as a considerable part of it passed through me undigested in the form of granules. Venus semel during the first period. I remarked also a great inequality in the encrease of the weight of my body. On the first day the encreased weight was 1 lb 15 oz. 8 dr.—on the second, 1 lb 15 oz.—on the third, 2 lb 13 oz. 4 dr.—on the fourth, 10 oz. 4 dr.—on the fifth, 10. 13 dr. This great variation may have been partly owing to the retention of the food in the intestines during the first days of the period; and on the second day I drank more water than usual, which, probably caused the great encrease of weight on the morning following.

During the second period I found the diet begin to disagree with me; I lost my appetite, and was seized with severe head-achs, with uneasiness at my stomach and bowels, and great part of the tallow passed through my body unassimilated. I was thirsty, and greatly troubled with wind, both up-
wards

wards and downwards. I also at this time observed a considerable encrease in my urine.

Having been extremely uneasy during the night of the second of December, and having no appetite for food on the morning of the third, I thought proper, though my appetite returned in the afternoon, to abstain from food the whole day, and next morning was quite well.

Suppecting that the bad effects of the preceding diet were owing to the quantity, and not the quality of the tallow, I diminished the quantity during the last period, and had then the satisfaction to find the diet agree with me perfectly well. My bowels were quite easy, and I was not troubled with wind, with thirst, or with head-ach, and no part of the tallow remained undigested.

The weight of my body was encreased on the first day, 2 lb 14 oz. 8 dr.—on the second, 1 lb 11 oz.—on the third, having had a large stool, there was a loss of weight 5 oz. 9 dr.—on the fourth, again an encrease of 4 oz. 10 dr.—on the 5th, of 3 oz. 7 dr.

I should, possibly, have continued longer on this diet, which I found both nourishing and agreeable, but wishing to ascertain, as exactly as possible, the effect of the oil or tallow, I began the following

EXPERIMENT

E X P E R I M E N T X I.

Diet of Flour, Water and Salt.

Period, December, 9, 10, 11, 12, 13.	State of the at- mosphere during the period.	Daily allowance of food	Discharges by urine and stool.	Loss of weight at the end of the period.
	Thermometer from 42 to 48. Weather various, rain on the 10th and 11th, frost on the 13th.	Flour, 24 oz. Water, 4 lb. Salt, 12 dr.	Urine, 17 lb. 2 soft stools, weighing 1 lb. 1 oz. 13 dr.	5 lb. 6 oz. 5 dr.

R E M A R K S.

On the first day of this Experiment my appetite was pretty well satisfied, but afterwards, particularly towards the end of it, I found that in two or three hours after a meal, consisting of one half my pudding, I became hungry, and I was extremely so every night at bed-time.

On the former diet, with oil or suet, four pints of water were hardly sufficient to quench my thirst; and, commonly, at bed-time, I was obliged to sip a little more. On the present diet I was never thirsty, and am persuaded that I might at this time, without inconvenience, have diminished my common allowance of water, but I continued it nearly the same for an obvious reason, viz. that I might judge with more accuracy of the effect of the suet or oil joined with the other parts of my food.

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When the pudding was made with fuet, I found the one half of it rather too much for one meal; whereas when it was made without fuet, I sometimes thought that I could easily have ate the whole at one time. Whilst I lived on a pudding made with oil or fuet, I felt no inconvenience from retaining my water the whole night, but on the present diet, I found it very difficult and even painful to do so; and several times whilst I was engaged in the morning, in observing the nocturnal perspiration, a little urine run off involuntarily. My fœces were, during this experiment, of an orange colour, during the former of a buff colour, and were of a still lighter colour when the proportion of fat was greater.

I lost in weight, on the first day, 5 oz. 6 dr.—on the second, 10 oz. 3 dr.—on the third, 1 lb 3 dr.—on the fourth, 1 lb 10 oz. 7 dr.—on the fifth, 1 lb 12 oz. 2 dr. thus when the body was not properly nourished, the loss of weight was greatest on the last days of the Experiment, but when the body was more than supported, the encrease of weight was greatest on the first days of such a regimen. I also remarked, that the encrease of urine, was nearly, though not exactly, in proportion to the decrease of the weight of the body.

A REPETITION

A REPETITION of EXPERIMENT X.

Diet of Flour, Beef Suet, Water and Salt.

	State of the atmosphere	Allowance of food.	Discharges.	Gained in weight
December 14.	Thermometer 45. Weather cloudy, with rain.	Flour, 24 oz. Suet, 4 oz. Water, 4 lb. Salt, 12 dr.	Urine, 2 lb. 12 oz.	9 oz. 15 dr.

R E M A R K S.

To ascertain more fully the effect of suet in my pudding, I again repeated it for one day, and observed, as formerly, that my appetite was satisfied with half the quantity, and that I was not hungry until five hours after my usual meal. I was a little thirsty after dinner, and my urine was one pint two ounces less in quantity than on the preceding day.

S E X P E R I M E N T

E X P E R I M E N T XII.

Diet of Flour, fresh Butter, Water and Salt.

	State of the atmosphere.	Allowance of food.	Discharges.	Loss of weight.
December 5.	Thermometer 45. Weather rainy and cloudy.	Flour, 24 oz. Butter, 4 oz. Water, 4 lb. Salt, 12 dr.	Urine, 2 lb. 7 oz. 2 liquid stools, weighing 1 lb.	1 lb. 3 oz. 10 dr.

R E M A R K S.

Finding that the result of the Experiments with suet, or animal oil, corresponded very much with those I formerly made with oil of olives, a vegetable expressed oil, I was desirous of extending my enquiry to other oily substances. I began with fresh butter, which I imagined might safely be taken in the same quantity as suet or oil of beef, but soon after dinner, which was this day my second and last meal, I became uneasy at my stomach, brought up some wind and had pain in my bowels, and soon afterwards had two thin stools, accompanied with considerable heat in the fundament, straining, and even with sweating and trembling. I was extremely ill all the evening, and continued very uneasy in my bowels, and with a pain in my fundament during the whole of the night.

EXPERIMENT

E X P E R I M E N T XIII.

Diet, Yolks of Eggs, Suet, Figs and Water.

December 16.	State of the atmosphere during the period.	Allowance of food.	Discharges.	Loss of weight
	Thermometer 49. Weather fair and serene.	Yolks of eggs, Suet, of each 4 oz. Figs, 1 lb. Water 4 lb.	Urine, 3 lb. 14 oz. liquid stool, weighing 4 oz. 6 dr.	13 oz. 10 dr.

R E M A R K S.

Disappointed in the effect of butter, and not having provided any other food, I was this day somewhat irregular; wishing to know the precise effect of flour, and to have some means of judging of the share which it had in the preceding nourishing diet, I had, for some days, been trying to unite or combine fat and water, by means of some mucilaginous substance, imagining that if they could be retained in the body, they would, perhaps, supply a sufficient nourishment without the flour. Gum Tragacanth, which is the strongest vegetable mucilage, a jelly of calves feet, whites of eggs, and the yolks of eggs, were tried, in various proportions, the last answered the best of any, although it did not form a complete union between the suet and water. I breakfasted on the quantity mentioned in the table, with two pints of warm water, imagining

that the stomach and bowels would possibly complete the union.

After breakfast I became somewhat uneasy at my stomach, and in two hours had a liquid stool, resembling exactly the food I had taken, and which contained some of the clear melted fat, not united with the water or egg. I had no pain in my bowels, or straining with this stool, as with those occasioned by the butter, and I was soon hungry. My urine also, was greatly increased after the above liquid meal.

I likewise tried, if by coagulating the yolks of eggs, and continuing the heat for several hours, it was possible to unite the tallow more intimately, but in this I was disappointed, and the mess was so disagreeable, that, after tasting it, though I was extremely hungry, I could not eat it, and therefore dined on one pound of figs, with two pints of tea, which was a very agreeable meal, and I did not become hungry again till after five hours.

EXPERIMENT

EXPERIMENT XII. VARIED.

Diet of Flour, Butter, or Oil of Butter, Water and Salt.

Period, December 17, 18, 19, 20.	State of the atmosphere during the period.	Daily allowance of food.	Discharges.	Gained in weight at the end of the period.
	Thermometer from 44 to 49. Weather, variable, rain on the 18th.	Flour, 24 oz. Butter, or oil of butter, 4 oz. Water, 4 lb.	Urine, 11 lb. 2 oz. 2 thin stools, on the 19th, weighing 1 lb. 6 oz. 9 dr.	1 lb. 7 oz. 3 dr.

REMARKS.

Suspecting, that the butter not having been intimately combined with the flour and water, in the first Experiment, was the reason of its disagreeing with my stomach and bowels; and being also persuaded, that though in this way, it was found to disagree with the stomach, yet the oil of butter, separated from the other parts, and taken by itself, might not have the same effect; I was desirous of ascertaining both these facts: and therefore, in the preceding Experiment; I employed fresh butter, and oil of butter alternately, both of them being mixed up with the flour and water into a pudding.

On the 17th, in the morning, I was quite well, and had a good appetite for breakfast, but I had no appetite for dinner, and

and ate my pudding, made with butter, with reluctance. After dinner I was drowzy, thirsty, and obliged to drink half a pint more than my allowance. I had considerable uneasiness in my bowels, with some wind downwards, but no stool.

On the 18th, when I used the oil of butter, I had a very good appetite for dinner, and no thirst, or uneasiness in my bowels after it, although I passed a good deal of wind.

On the 19th, when I again employed butter, I was thirsty, uneasy in my bowels, and had two loose stools, with strainings and pain in my fundament.

On the 20th, when I made use of oil of butter, my appetite was very good, and I had very little thirst, or uneasiness in my bowels, but still I was not quite so easy as I had been when I used the same quantity of the oil of fuet.

EXPERIMENT

E X P E R I M E N T XIV.

Diet of Flour, Oil of Marrow, Water and Salt.

First Period, December, 21, 22.	State of the atmosphere during the period.	Daily allowance of food	Discharges.	Increase of weight.
	Thermometer ○ Weather ○	Flour, 24 oz. Oil of Marrow, 4 oz. Water, 4 lb. Salt, 12 dr.	Urine, 4 lb. 6 oz.	1 lb. 4 oz. 2 dr.
Second period, December 23, 24, 25.	Thermometer ○ Weather ○	Flour, 24 oz. Oil of Marrow, 6 oz. Water, 4 lb. Salt, 12 dr.	Urine, 7 lb. 12 oz. 2 soft stools, weighing 1 lb. 2 oz. 1 dr.	1 lb. 4 oz. 13 dr.

R E M A R K S.

Marrow, by gentle heat and pressure, yields about $\frac{1}{12}$ of a pure oil, much pleasanter, both to the taste and smell, than the oil obtained from fat or suet. This oil was combined, as usual, with flour and water, into a pudding; with which, though my appetite was sufficiently satisfied, yet I was hungry
for

for each meal. I was not in the least thirsty, was easy in my bowels, brought up no wind, and passed none downwards. I found myself remarkably well on this regimen, and thought my spirits raised by it; though this might be only opinion, as it is difficult on such subjects to distinguish between fancy and reality. I sometimes had desires. Venus semel, during the first period,

Finding the oil of marrow so mild in the bowels, and at the same time so agreeable a food, I increased the quantity, to judge still further of its effects, and particularly to determine whether the degree of nourishment, or rather of increase in the weight of the body, was in proportion to the quantity of nourishment taken.

I had a stool on the 25th, and another on the morning of the 26th, but in neither could I perceive any granules, as was the case when I used the same quantity of fat or suet.

I continued perfectly easy until the 26th, when I felt myself somewhat dull before dinner, brought up some wind, and had little or no appetite. In the evening I was very drowsy and thirsty, and obliged to drink half a pint more than my common allowance of water, but on this, and even on the preceding day, the angles of several of the gums were purple, and a little swelled. Venus semel.

EXPERIMENT

E X P E R I M E N T XV.

December 26.	State of the weather. ○	Diet irregular. $\frac{1}{3}$ of a pudding made with 6 oz. of suet. Water, or tea, 2 lb. 6 oz. Black currants, 8 oz.	Discharges. Urine, 2 lb. 10 oz. 1 stool, weighing 9 oz.	Weight of the body in the morning. 10 ft. 13 lb. 9 oz. 6 dr.
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R E M A R K S.

As the oil of marrow seemed to be less nutritious than that of suet, I purposed, in order more exactly to ascertain the fact, to have again taken the suet for two or three days, particularly as I wished to clear up a doubt which I still entertained, viz. whether the same food, or food of the same nutritious power, taken when the body is in a low state, may not raise it faster than if taken when the body is in better condition. When I first began to use the suet my body was extremely low, which was not the case when I began to use marrow, and therefore, to this circumstance, possibly, may be ascribed, the apparent difference of their nutritious powers. I was, however, prevented making this Experiment, by having no appetite in the morning; and, though I forced myself to eat part of a suet pudding for breakfast, I could take no more food during the day, and suffered much uneasiness.

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from wind in my bowels. In the evening I was easier, and ate half a pint of black currants. I was determined also, by the appearance of my gums and skin, to change, for some little time, my plan of living.

Although upon my pudding diet, I had in general pretty good spirits, yet I fancied that I was not so lively as usual, nor so active and vigorous, either in body or mind.

N.B. *As Dr. Stark made no abstract of his journal after the 26th of December, the Editor has endeavoured to supply this loss from the original journal in his possession.*

EXPERIMENT

E X P E R I M E N T XVI.

Diet. Bread, with roasted Fowl, Infusion of Tea and Sugar.

Day of the Month,	*State of the Weather	Allowance of food	Discharges by stool and urine.	Weight of my body,
December 27.	Serene, Rainy, Cloudy.	Bread, 2 lb. Roasted fowl, 8 oz. with a little salt, Infusion of tea, sweetened with sugar, 3 lb. 9 oz.	Urine plentiful. 1 large stool.	10 ft. 9 lb. 9 oz. 14 dr.
28.	Rainy, Cloudy, Variable.	Bread, 2 lb. Roasted fowl, 12 oz. 3 dr. Tea, 3 lb. 9 oz.	Urine, 3 lb. 3 oz.	10 ft. 9 lb. 13 oz. 10 dr.

R E M A R K S.

Dec. 27. I slept quietly, and awoke this morning, at my usual time, hungry and perfectly easy. Immediately after getting up I had a buff-coloured stool. Was not my indisposition of yesterday occasioned, by my having rather imprudently encreased, and persevered too long in the use of the oil of marrow? which, when taken in a moderate quantity, seems, of all fats, the mildest in the bowels.

* Dr. Stark, from this time, seems to have paid no attention to the thermometer, though he has noticed the weather with particular accuracy.

This morning I observe the gums of the double teeth, on each side of the upper jaw, considerably swelled, of a purple colour, and, some of them, almost black at the corners; they are, likewise, hot and painful; those of the left side bled on my biting a bit of bread.— The gums of the lower jaw appear to be quite sound. Most of the goose-skin eminences on my legs and thighs are of a deep red, some of them purple; and the discolouration, which extends even beyond the eminences, is somewhat brownish at the edges. Under my left breast there is also a true petechial spot, having the same appearance, as formerly during my severe illness.

It is worthy of being remarked, that after I had lived for some time, on animal food entirely, although I was reduced lower in weight, in strength, and in spirits, than at present; yet there were no such appearances. Is it not probable, then, that animal oils, though they nourish and encrease the weight of the body, are not of themselves sufficient, to prevent a morbid alteration from taking place in the blood and fluids? Whilst, on the other hand, the lean of meat, though less nutritious, is of more efficacy in preserving the fluids of the body in a sound state? Notwithstanding, however, what I have observed of my gums, and the eminences on my legs; my countenance, and skin in general, has the appearance of health.

My food, this day, I found quite sufficient to satisfy my appetite. I had a little wind both upwards and downwards.

28th. When I awoke this morning, I perceived a disagreeable, sweetish taste in my mouth, and my gums had an offensive smell; in other respects I was much as yesterday. Towards evening my gums were considerably easier and better, but I was attacked with a severe cholic, which continued most of the night.

E X P E R I M E N T

E X P E R I M E N T XVII.

Diet. Bread, stewed Lean of Beef, with the Gravy, Infusion of Tea, with Sugar.

Day of the month.	State of the weather.	Allowance of food.	Discharges by urine and stool.	*Weight of the body.
December 29.	Variable, Serene, Ditto.	Stewed beef, &c. 1 lb. Bread, 2 lb. Tea, 3 lb. 9 oz.	Urine, 3 lb. 7 oz.	10 st. 10 lb. 7 oz. 6 dr.
30	Variable. Snow, Rain,	Food, ditto.	Urine, 2 lb. 13 oz. Stool, 7 oz. 4 dr.	10 st. 12 lb. 9 oz. 13 dr.
31	Variable, Serene, Ditto.	Food, ditto.	Urine, 4 lb.	10 st. 12 lb. 9 oz. 14 dr.
Jan. 1.	Cloudy, Variable, Cloudy.	Food, ditto.	Urine, 3 lb. 15 oz. Stool, 8 oz. 3 dr.	10 st. 13 lb. 4 oz. 4 dr.

REMARKS.

* The weight was taken immediately after breakfast.

R E M A R K S.

Dec. 29. I passed an unpleasant night, having been either kept awake by the pain of the cholic, or having my sleep disturbed by disagreeable dreams. In the morning I had not so much of the sweetish taste in my mouth, my gums were paler, less swelled, and not so offensive to the smell as on the preceding day; the spots on my skin were also paler.

My appetite was not sufficiently satisfied with four ounces of meat for breakfast, but I found that eight ounces at dinner, and four at supper, were rather too much for me. I had no uneasiness in my bowels, and passed but little wind either way. At bed-time I was thirsty, and drank a few ounces of water.

30. I slept quietly until an hour or two before day-light, when I had a little disturbance in my bowels, but without pain. My gums now scarcely occasion any offensive smell or taste. At dinner, besides my usual allowance of beef, &c. I ate some rice-pudding, with melted butter, and drank two glasses of wine. After dinner I had a pain at the pit of my stomach, but which went off upon my bringing up a little wind. Before supper I had a head-ach, but this went off; also, after a firm stool, of a dark, earthy colour, attended with violent straining; a little before going to bed I was troubled with wind, and a good deal griped.

31. My appetite is satisfied with my present allowance of food, which I find would not be the case were I at all to lessen it. I commonly

monly eat my beef cold, being more agreeable to me than when hot. My bowels are quite easy, I passed a little wind downwards, but none upwards. My gums, though not livid as at first, are still red, a good deal puffed up, are apt to bleed on being pressed with the finger, and are so painful, that it is troublesome to me to eat even the crumb of bread. This evening I perceive that the spots on my skin are paler than they were in the morning: Although the quantity of my drink was the same as formerly, my urine is to-day considerably encreased. I observe that the urine, collected during the night, is much paler than what I make in the day.

Jan. 1. Although I sleep quietly every night, yet my gums are still puffed up, livid and uneasy; and in the left side, there is a small smarting sore, in a place from which a tooth was extracted some years ago. To-day I have been hungry for each meal, and was considerably so after supper. I am quite easy and in good spirits, with little or no wind either way; before dinner I had a firm stool of a uniform dark brownish colour. Although, at present, I take more food than what is absolutely necessary for the support of the body, I remain perfectly well, whereas I have several times suffered considerable inconvenience from committing any excess in the quantity of oils. Is it not evident, then, that an excess in the use of oils, is more hurtful to the body, than an excess in any other article of food? and that, of course, we ought to be particularly careful in regulating the quantity and quality of the oils we employ in diet.

E X P E R I M E N T XVIII.

Diet. Bread, The Fat of stewed Beef, with the Jelly, Water and Salt.

Day of the month.	State of the Weather.	Allowance of food.	Discharges by urine and stool.	Weight of the body.
Jan. 2.	Cloudy, Ditto, Rain.	Fat of beef, 4 oz. Bread, 2 lb. Water, 3 lb. 9 oz.	Urine, 4 lb. 6 oz.	10 ft. 12 lb. 10 oz. 14 dr.
3.	Cloudy, Ditto, Ditto.	Fat of beef, 4 oz. Bread and water as yesterday.	Urine, 3 lb. 10 oz. Stool, 10 oz. 6 dr.	10 ft. 13 lb. 6 oz. 2 dr.
4	Cloudy. Ditto, Snow.	Food, ditto.	Urine, 3 lb. 10 oz. Stools, 11 oz. 6 dr.	10 ft. 13 lb. 6 oz. 2 dr.
5	Serene, Frost, Ditto.	Food, ditto.	Urine, 2 lb. 12 oz.	10 ft. 13 lb. 6 oz. 2 dr.

REMARKS.

R E M A R K S.

Jan. 2. With a view to compare the effects of the fat of beef, (which may be somewhat different from the oil already tried) with those of the lean, I began, this day, a course of Experiments with the former. The fat which I used, was stewed with the lean of the beef, separated from it when cold, and ate, with as much of the jelly as seemed to belong to it; the pure oil, which had concreted on the surface, was entirely removed. But, as the lean of stewed beef had some fat mixed with it, in like manner the fat has some lean, which renders the Experiment not so complete as one I purpose making with boiled buttock of beef, of which I shall use the two parts accurately separated from each other; but, previous to this, I intend to try the effect of greens and fresh fruit.

Is it not possible, that a small quantity of fat may afford the same nourishment as a larger quantity of lean, and may be so prepared as to be more easily assimilated by weak digestive organs? Perhaps marrow, mixed up with panada, might prove a proper and useful food for convalescents.

This morning my gums were quite well, and the goose-skin eminences on my legs were only of a pale red. I was hungry for breakfast, and made a very agreeable one, upon two ounces of fat*, with bread and tea; and, finding myself hungry sooner than I expected after breakfast, I took, for dinner, three ounces of fat, which was also a very agreeable meal. In the evening I supped on

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bread

* The fat as well as lean I always eat cold.

bread and tea. I was in excellent spirits, much inclined to venery, to which I did not feel the smallest propensity, whilst living on the lean of meat. I passed little wind either way.

3. (Venus bis.) My sleep was somewhat disturbed in the night by disagreeable dreams; my appetite, to-day, has been very well satisfied until evening, when I felt myself hungry,

4. I was restless last night, and had a frightful dream. A few hours after breakfast I had a firm, dark brown stool. The affection of my gums still continues, although in a slighter degree than when I began to eat meat.

5. I slept well in the night, excepting that I was disturbed by a dream, attended with an emission, a circumstance that has not happened to me above three or four times in my life. I was rather dull after breakfast, probably owing to my having ate too much fat.

A REPETITION

A REPETITION OF EXPERIMENT VII.

*Diet. Bread, the Lean of boiled Beef, Infusion of Tea with Sugar,
(no Salt.*)*

Day of the month.	Sate of the weather.	Allowance of food.	Discharges by urine and stool.	Weight of the body.
Jan. 17.	Serene, with frost.	Bread, 2 lb. Lean of beef, 1 lb. Infusion of tea, 3 lb. 9 oz.	1 stool, weighing 4 oz. 4 dr.	11 ft. 3 lb. 13 oz. 4 dr.
18.	Cloudy, Snow, Rain.	Food, ditto.	Urine, 4 lb. Stool, 1 lb. 4 oz. 12 dr.	11 ft. 1 lb. 8 oz. 6 dr.
19.	Rain, Serene, Cloudy.	Beef, 12 oz. Bread, as above.	Urine, 2 lb. 14 oz.	11 ft. 11 lb. 12 oz. 10 dr.
20.	Cloudy, Ditto, Ditto.	Beef, 14 oz. Bread, as above.	Urine. 3 lb.	11 ft. 3 lb. 1 oz. 8 dr.

U 2 R E M A R K S.

* Sir John Pringle having a suspicion that the large quantity of salt which I formerly used, might occasion the affection of my gums; I omitted it entirely in the present Experiment.

R E M A R K S.

Having, since the 5th, been engaged in a canvas for St. George's Hospital, I have been very irregular in respect to diet, living rather more freely, and drinking more wine than usual. I have also walked a good deal; but, upon the whole, have been extremely well in health, excepting one night, when, from a desire of preventing hunger the next morning, I ate too much fat for supper. I have had commonly one soft stool a-day. My gums are quite firm and well, and the goose-skin eminences are of the natural colour of the skin. The weather has been, in general, severe, with frost and snow, until within these few days, when it has been a little milder.

17. My appetite, this day, has been rather more than satisfied. I passed a good deal of wind downwards, and, before supper, had a small firm stool.

18. Early this morning I felt considerable uneasiness in my bowels, had a stool, the latter part of it thin. Had no appetite for supper, which I would rather have omitted; very dull all day; took [no exercise till the evening, had then a good deal of pain in my belly, and was greatly troubled with wind.

19. I was still low-spirited and dull, but this was, possibly, in part, owing, to my having but small hopes of success at St. George's

George's Hospital. I had some disturbance in my bowels in the morning, and again in the evening, attended with pain. My appetite was rather more than satisfied, and I had some slight desires.

20. I went to bed soon after supper, dreamt in the night, though not frightfully; passed a good deal of wind before I got up; used a good deal of exercise in the morning, and breakfasted three hours later than usual. I find my appetite more than satisfied, and I am now quite easy in my bowels.

EXPERIMENT.

EXPERIMENT XIX.

Diet. Bread, Fat of boiled Beef, Infusion of Tea with Sugar.

Day of the month.	State of the weather.	Allowance of food.	Discharges by urine and stool.	Weight of the body.
Jan. 21.	Cloudy, Variable, Serene.	Fat of boiled beef, 3 oz. Bread, 2 lb. Tea, 3 lb. 9 oz.	Urine, 2 lb. 9 oz. Stool, 9 oz. 12 dr.	11 ft. 4 lb. 9 oz. 12 dr.
22.	Cloudy, Serene, Rainy.	Fat, 2 oz. Bread, &c. ditto.	Urine, 3 lb.	11 ft. 3 lb. 3 oz. 13 dr.
23.	Cloudy, Serene, Ditto.	Food, ditto.	Urine, 1 lb. 13 oz.	11 ft. 4 lb. 10 oz. 10 dr.
24.	Serene, Ditto, Ditto.	Fat, $2\frac{1}{2}$ oz. Bread, &c. ditto.	Urine, 2 lb. Stool, 3 oz. 8 dr.	11 ft. 6 lb. 2 oz. 3 dr.

REMARKS.

R E M A R K S.

Jan. 21. My morning urine was high-coloured, and became turbid on standing. This morning I walked a good way before breakfast, and breakfasted an hour earlier than yesterday; my bowels were somewhat uneasy, and I passed a great deal of wind downwards. The fat I use has been kept some days since it was boiled, but seems quite sweet; I found two ounces rather too much for breakfast, and I was under the necessity of eating half my loaf with it.

Before dinner I had a dark coloured stool, of a moderate consistence; at dinner I could not finish an ounce of fat. I had a slight pain in my bowels after breakfast; and, although I had no wind, was a little griped before I went to bed. In the night, after some severe griping pains, I had a purging, dark-coloured, slimy stool, which I apprehend to have been occasioned from the fat (as it had been kept some days,) being somewhat rancid, although this was not perceptible either to the smell or taste. Possibly, the sudden change of diet was partly the cause of it.

22. At breakfast I could eat only one ounce of fat, and that with reluctance, as the fat was soft and greasy, which is more disagreeable than when firm and dry—I ate another ounce at dinner, and although, from being harder, I ate it with less reluctance, yet I found it fully enough for my stomach. As my appetite

appetite was fully satisfied, I ate no supper. I was easy in my bowels and well in every respect. (Had desires.)

23. (Venus femel.) I ate an ounce of hard fat for breakfast, without reluctance, it was quite fresh, having been boiled only two days before—I easily ate the same quantity at dinner—I was perfectly easy in my bowels, had no wind upwards, and little downwards—Was somewhat hungry at bed-time.

24. The fresh and friable fat became at last to be almost as agreeable to me as butter. My appetite was not more than satisfied, and whilst using this diet I felt myself lighter, more alert and easier, than when living on the lean of meat only. I had scarcely any wind in my stomach—At twelve I had a light yellow stool of a moderate consistence.

EXPERIMENT

E X P E R I M E N T XX.

Diet. Bread, the Lean of roasted Veal, and Water.

Day of the month.	State of the weather.	Allowance of food.	Discharges by urine and stool.	Weight of the body.
Jan. 25.	Cloudy, Ditto, Rain.	Lean of roasted veal, 12 oz. Bread, 2 lb. Water, 3 lb. 9 oz.	Urine, 2 lb. 4 oz.	11 ft. 5 lb. 12 oz. 4 dr.
26.	Rain, Cloudy, Serene.	Food, ditto.	Urine, 4 lb. 5 oz.	11 ft. 4 lb. 7 oz. 10 dr.
27.	Cloudy. Ditto, Ditto,	Breakfast, roasted veal, 3 oz. Dinner and supper irregular.	Urine, 3 lb. 14 oz. Stool, 5 oz. 8 dr.	11 ft. 3 lb. 15 oz. 14 dr.

R E M A R K S.

Jan. 25. I was very hungry for dinner, and immediately before it had a stool, partly costive and partly loose. May not a sudden change of diet have an effect in opening the body, even though the

X

change

change made, be from a kind of food naturally more opening, to one that is less so? At bed-time I felt some commotion in my bowels, and passed some wind downwards.

26. I have dreamt for some nights past. To-day I have brought off wind, and several times some stuff from my stomach; I have likewise been drowsy, especially after dinner; I am easy in other respects, and my appetite not more than satisfied.

37. I had desires in the night, but which went off upon emptying my bladder. I dined and supped abroad, and ate heartily of a variety of different things, but, though I did not overload my stomach, I was not so easy as usual for some time after I went to bed.

EXPERIMENT

E X P E R I M E N T XXI.

Diet. Bread, Fat of Bacon Ham, Infusion of Tea, with Sugar.

Day of the month.	State of the weather.	Allowance of food.	Discharges by urine and stool.	Weight of the body.
January 28.	Cloudy, Ditto, Ditto.	Fat of boiled ham, $1\frac{1}{2}$ oz. Bread, 2 lb. Tea, 3 lb. 9 oz.	Urine, 2 lb. 12 oz. Stool, 10 oz.	11 ft. 6 lb. 5 oz. 4 dr.
29.	Rain, Cloudy, Ditto.	Fat of ham, 2 oz. Bread, &c. as above.	Urine, 2 lb. 4 oz. Stool, 1 lb. 6 oz. 8 dr.	11 ft. 6 lb. 9 oz. 8 dr.
30.	Cloudy, Mixed, Cloudy.	Fat of ham, 3 oz. Bread, &c. as above.	Urine, 2 lb. 13 oz.	11 ft. 5 lb. 12 oz. 4 dr.
31.	Rainy, Ditto, Cloudy.	Fat of ham, $2\frac{1}{2}$ oz. Bread, &c. as above.	Urine, 2 lb. 15 oz.	11 ft. 5 lb. 13 oz. 4 dr.

R E M A R K S.

Jan. 28. The fat of bacon ham is much more greasy than that of beef. I ate as much of the fat, quite pure, at breakfast and dinner, as was agreeable to my stomach; and, though at supper I was rather hungry, I took none, being apprehensive of its purging me. Some little time before dinner I had a stool of a moderate consistence, covered with a white frothy liquid. At bed-time I was very hungry.

29. Having observed that my urine ran off pretty copiously, both after breakfast and after dinner, and being somewhat hungry towards nine o'clock, I intended to have ate half an ounce more of fat at supper, but was prevented by a sudden commotion in my bowels, which was followed by a loose, frothy stool, though without any considerable uneasiness or griping, as was the case after eating butter; I was the whole day uncommonly dull and low-spirited, and in the evening, before going to bed, made two pints of water.

30. May not the purgative quality of the fat be imputed, in a great measure, to its rancidity?

31. I found no inconvenience from the increased quantity of fat which I ate this morning at breakfast. At bed-time I was somewhat hungry, and had a loose stool, without any considerable uneasiness, although I was griped after it; there were some whitish particles mixed with the stool, and along with it also some ropy mucus. Upon my present diet I was never thirsty, had hardly any wind, and no desires.

E X P E R I M E N T

E X P E R I M E N T XXII.

Diet. Bread, Lean of Bacon Ham, Infusion of Tea, with Sugar.

Day of the month,	State of the weather.	Allowance of food.	Discharges by urine and stool.	Weight of the body.
Feb. 1.	Mixed, Serene, Ditto.	Lean of ham, 10 oz. Bread, 2 lb. Tea, 3 lb. 9 oz.	Urine, 2 lb. 4 oz.	11 ft. 5 lb. 13 oz. 2 dr.
2.	Serene, Cloudy, Ditto.	Food, ditto.	Urine, 3 lb. 9 oz. Stool, 10 oz. 8 dr. Ditto, 2 oz. 8 dr. Ditto, 9 dr. Ditto, 3 dr.	11 ft. 3 lb. 14 dr.
3.	Cloudy, Ditto, Ditto.	Lean of ham, 9 oz. 4 dr. Bread, &c. as above.	Urine, 2 lb. 9 oz. Stool, 2 oz. 6 dr.	11 ft. 5 lb. 4 dr.

R E M A R K S.

Feb. 1. I was extremely thirsty after dinner, but was rather hungry than thirsty after supper. In the evening I passed some wind downwards.

2. I awoke

2. I awoke early in the morning with pain in my bowels, passed some wind downwards, was obliged to get up to the chair, and had a loose stool, of a yellow colour, and unequal consistence. I was very hungry for breakfast, and immediately after it was griped, and had a second loose stool, which was slimy and accompanied with violent straining; the purging continued all day, attended with great foreness, pain in my bowels, and violent straining; the stools were chiefly slime or jelly, with some feculent matter and blood; notwithstanding this indisposition I was hungry at bed-time.

3. I was pretty easy during the night, and continued so till after dinner, when the uneasiness in my bowels returned, and I had a loose slimy stool, and passed a good deal of wind. My urine was high-coloured. Was the purging owing to the salts in the ham, to the firmness of its texture, or to its being somewhat rancid?

EXPERIMENT

E X P E R I M E N T XXIII.

*Diet. Bread, or Flour, with Honey, and Infusion of Tea or of
Rosemary.*

Day of the month.	State of the weather.	Allowance of food.	Discharges by urine and stool.	Weight of the body.
Feb. 4.	Cloudy, Ditto, Mixed.	Breakfast, Honey, 3 oz. Bread and tea. Dinner irregular.	Urine, 2 lb. 10 oz. 1 soft stool, not $\frac{1}{2}$ an oz.	11 ft. 5 lb. 7 oz. 4 dr.
5.	Serene, Mixed, Rainy.	Honey, 8 oz. Flour, 1 lb. 8 oz. Water, 8 oz. (made into a pudding.) Tea, without sugar, 3 lb. 8 oz.	Urine, 1 lb. 15 oz. Stool, 7 oz.	11 ft. 6 lb. 2 oz. 2 dr.
6.	Serene, Ditto, Ditto.	Honey, 8 oz. Bread, 2 lb. Weak infusion of rosemary, 3 lb. 8 oz.	Urine, 4 lb. 10 oz. Stool, 10 dr.	11 ft. 3 lb. 14 oz. 3 dr.
7.	Rainy, Snow, Mixed, very cold.	Honey, 12 oz. Flour and water, as above, (made into a pudding.) Infusion of rosemary, 3 lb. 8 oz.	Urine, 1 lb. 15 oz. Stool, 9 oz. Ditto, 10 oz. 8 dr.	11 ft. 5 lb. 9 dr.
8.	Serene, } Ditto, } Frost. Ditto, }	Honey, 6 oz. Bread, 2 lb. Infusion, 3 lb. 8 oz.	Urine, 4 lb. 11 oz. Stool, 6 oz. 4 dr. Ditto, 2 oz. 13 dr.	11 ft. 1 lb. 13 oz. 6 dr.
9.	Serene, } Ditto, } Frost. Cloudy. }	No Honey, Bread, 2 lb. Infusion, 3 lb. 8 oz.	Urine, 1 lb. 3 oz.	11 ft. 11 lb. 10 oz. 8 dr.

E X P E R I M E N T

EXPERIMENT XXIII. CONTINUED.

Day of the month.	State of the weather.	Allowance of food.	Discharges by urine and stool.	Weight of the body.
Feb. 10.	Rainy. Cloudy, Ditto.	Honey (which had been exposed to a boiling heat) 4 oz. Bread and infusion of rosemary, as formerly.	Urine, 1 lb. 9 oz. Stool, 5 oz. 2 dr.	11 ft. 10 lb. 10 oz. 2 dr.
11.	Cloudy, } Ditto, } Mild. Ditto, }	Virgin honey, 4 oz. Bread and infusion as formerly.	Urine, 2 lb. 1 oz. Stool, 1 lb. 1 oz.	11 ft. 4 lb. 14 oz. 9 dr.
12.	Cloudy, } Ditto, } Mild. Ditto, }	Honey (heated in balneo Mariæ) 4 oz. Bread and infusion, as formerly,	Urine, 2 lb. 12 oz.	11 ft. 4 lb. 7 oz. 2 dr.
13.	Mixed, } Cloudy, } Mild. Serene. }	Honey, 4 oz. Flour, 1 lb. 8 oz. Water, 12 oz. (made into a pudding, and stewed) for several hours. Infusion, 3 lb. 4 ⁵ / ₈ oz.	Urine, 2 lb. 10 oz.	11 ft. 4 lb. 11 oz. 9 dr.
14.	Serene, } Mixed, } Very Serene. } mild.	Honey heated, 8 oz. Bread, 2 lb. Infusion, 3 lb. 8 oz.	Urine, 4 lb. 13 oz.	11 ft. 11 lb. 15 oz. 4 dr.
15.	Cloudy } Ditto, } Fogg. Ditto. }	No Honey, Bread, 2 oz. Infusion of rosemary, 2 lb. 6 oz.	Urine, 2 lb. 6 oz. Stool, 1 lb. 6 oz. Ditto.	11 ft. 11 lb. 8 oz. 10 dr.

REMARKS.

R E M A R K S.

Feb. 4. I breakfasted on three ounces of honey with bread; at dinner I was irregular, and drank some wine.

5. (Venus semel.) I had a stool immediately after breakfast, of a proper consistence, but which contained some pieces of plum and currant-skins, which I had ate the preceding day. My honey pudding, which had been stewed for several hours, was so firm that I had some difficulty in chewing it; a pound of it was rather too much for breakfast, and, though I was very hungry at dinner, I found even then a pound more than agreeable. In the afternoon and evening I passed some wind downwards, at bed-time I was extremely hungry. May we not reasonably suppose that food which is difficult to chew is difficult also to digest? Is not bread of more easy solution in the stomach than pudding, made with the same quantity of water. The pudding made with honey, besides being tough, was, in other respects, far less pleasant than bread and honey.

6. This day I varied the Experiment, to try whether the heat, or the intimate combination of the honey with the flour, made any sensible alteration in its effects. I made a larger quantity of urine, and which, of course, was much paler. Before dinner I had a small stool; after supper I passed some wind, and felt some slight commotion in my bowels; at bed-time I was extremely hungry.

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7. In

7. In my pudding to-day, only eight ounces of honey were mixed with the paste, four ounces were added afterwards. Immediately after breakfast, I had a stool of a common consistence, and before supper had a loose one, but without being griped. This evening I felt rather more commotion in my bowels than on the preceding one. I was very hungry for every meal, and, at going to-bed, extremely so.

8. This morning, soon after getting up, I was a little griped, and had a loose slimy stool of a moderate consistence. During the day I had three more purging stools, and was a good deal griped, with considerable uneasiness in my bowels; I had no appetite for food and was listless, drowsy, and uneasy all the evening.

9. I was somewhat uneasy in the night, and this morning early I was obliged to get up to the chair, and had a loose slimy stool, about eight ounces in weight. Yesterday my urine, after some time, became turbid, and deposited a brick-coloured sediment; to-day it was high-coloured, and became turbid also when cold. As I was still somewhat uneasy in my bowels, I thought it prudent to take no honey to-day; I omitted it also more readily, imagining that by so doing, I should be able to judge more accurately of its effects. I had little wind in my stomach during this or the two preceding days, nor had I any acute pain, or griping in my bowels, yet I was dull, and felt a general uneasiness. To-day, after taking a walk, I was hungry for dinner, and this morning I perceived, for the first time, on the inside of my cheek, a small, smarting, ash-coloured ulcer, its edges very red and swelled, but the gums and skin have, as yet, no morbid appearance.

10. (Venus semel.) I had some uneasiness in my bowels in the morning. Being desirous of ascertaining the effect of heat on honey, what I used to-day was previously kept, for three or four hours, in balneo Mariæ.

11. After breakfast I had a stool of the common consistence; in the evening had some commotion in my bowels. The edges of the sore in my mouth were not so much swelled as the day before. Was not the retention of urine on the 9th and 10th to be ascribed, rather to an indisposition occasioned by using too great a quantity of honey, than to the honey itself?

12. I was not very hungry either yesterday or to-day; now and then I was a little griped; in the evening my gums, particularly on the inside, were hot and somewhat swelled, a beginning scorbutic symptom; at bed-time I was again a little griped, and had a soft, or rather a loose stool.

13. Having found that heated honey, taken with bread, is not more diuretic than common honey, I again made it into a pudding, to try whether in this way it would not have the same diuretic quality as it had in the beginning of these Experiments. My urine run off very fast, and I was extremely hungry at bed-time; I had neither griping, wind, or inclination to stool.

14. I was extremely hungry for breakfast. I ate a larger quantity of heated honey than I had ever done, to try if it would prove diuretic, by encreasing the quantity.

Do not the preceding Experiments shew, that heated honey, though less purgative, is not much more diuretic than virgin-honey? and, as neither bread nor pudding have, of themselves, any diuretic quality, we are at a loss to account for the remarkable diuretic effect of honey pudding.

1+34-
abcd-
= 1000

Upon the honey diet I had no desires, no wind upwards, and little downwards; my spirits were, as usual, pretty good, and my body sufficiently active.

EXPERIMENT

E X P E R I M E N T XXIV.

Diet. Bread, with Cheshire Cheese, and Infusion of Rosemary.

Day of the Month,	State of the Weather	Allowance of food.	Discharges by stool and urine.	Weight of my body,
February 16.	Cloudy, Ditto, Ditto.	Cheshire Cheese, 4 oz. Bread, not quite 2 lb. Infusion of rose- mary, 2 lb. About 1 lb. of mulled Port.	Urine, Stool, Ditto.	11 ft. — 5 oz. 12 dr.
17.	Rainy, Cloudy, Ditto.	Bread, 2 lb. Cheese, 4 oz. Infusion of rose- mary, 3 lb. Water, 1lb. 8oz.	Urine, 2 lb. 4 oz. Stool, Ditto.	11 ft. — 11 oz. 2 dr.
18.	Mixed Rain & Snow. } Hurri- cane.	Bread, with infusion of rosemary, no cheese.	Urine, 1 lb. 10 oz.	11 ft. 13 lb. 5 oz. 10 dr.

R E M A R K S,

On the evening of the 14th I was very well when I went to bed, but awoke before day with considerable uneasiness in my bowels, and had several loose stools.

In

In the morning of the 15th I was chilly, sometimes with shivering, was listless and uneasy, though the uneasiness was chiefly in my bowels; I had not the smallest appetite for food. For breakfast I took about two ounces of bread, with a pint of infusion of rosemary, which, in about an hour after I had taken it, run from me by stool without pain. I continued all day extremely uneasy, sighing and moaning. Owing to my feebleness, I lay most of the time in bed, but without being sensible of any relief. In the evening, being thirsty, I drank another pint of infusion of rosemary. In the afternoon, besides my other complaints, a head-ach came on, which continued all night. During the night I was restless, very uneasy in the lower part of my belly, and had five or six liquid stools, but did not make above a few spoonsful of urine.

16. Towards morning the head-ach went off, but I was still uneasy in my belly, and had no appetite for food. My skin retained a natural appearance, and my gums, so far from being affected in the manner they had been by sugar, were universally very pale, almost white, and not in the least puffed up or painful. Immediately after breakfast I had a small watery stool; in the forenoon had a good deal of uneasiness in my bowels, at times some wind upwards. I was quite low and unfit for study; before dinner I had a small liquid stool. In the evening, being still uneasy in my bowels, and with noise in them, I took some mulled Port wine, and found myself better after it.

Does not an excess in sweets give a still greater shock to the constitution than an excess in fats? Is there any other article of food so hurtful as either, taken immoderately? Does it not appear

appear evident, that an excess at the end of a course of diet, is more hurtful than at the beginning of it?

17. I had a little head-ach last night when I went to bed, was late in getting to sleep; pretty early in the morning had a soft stool, still a little uneasiness in my bowels, and not much appetite. Before breakfast had a small liquid stool, after which I was very uneasy in my bowels. I had, pretty frequently, wind from my stomach, with now and then pricking pains in my bowels, and ineffectual attempts to go to stool; no appetite for food, but was thirsty. Urine high-coloured. At bed-time was tolerably well. Is my present indisposition owing in any measure to the change of weather? I purposed, after the honey-diet, to have tried some of the sweet fruits, but I found every thing sweet so disagreeable to me, that I rather chose something extremely opposite.

18. I slept pretty well, but, when I awoke in the morning, I felt much soreness in my bowels, as if they had been bruised, which made me sigh and groan; this uneasiness continued after I got up, and I had little or no appetite for breakfast. The urine which I made yesterday was turbid. I felt universally ill, and oppressed, with great uneasiness in my bowels, and sometimes much noise in them. I passed no wind downwards, but several times upwards. I was dull, very lazy, often sighed and moaned, and had no appetite for food. Four hours after rising this morning I breakfasted on bread and infusion of rosemary, but had no appetite. Suspecting that my present complaints might possibly arise, in part, from the cheese, I this day omitted it. In eating bread, I found the inside of
my

my mouth a little sore. There were two or three small pimples also at the corner of my mouth, and about as many large ones on my body. The uneasiness in my bowels, and universal distress, encrease when the hurricanes approach, and during their continuance I cannot stir, or even look up. Nothing passes through me, except sometimes a little wind upwards, or downwards, and that without relief.

Here terminates Dr. Stark's Journal, with the affecting recital of his illness and sufferings, during the last day of his life that he was capable of describing them. The sequel of this melancholy story, with the account of the fatal catastrophe which soon followed, I shall defer until I have finished with his other Experiments.

Did Dr. Stark commit Suicide?

STATICAL

STATICAL EXPERIMENT,

O R,

OBSERVATIONS

Made on the Weight of the Body, with a View to determine how far it is affected, both in the Day and Night, by the Discharges of Perspiration and Urine.

THE daily food, during the time in which the following observations were made, was always (the 3d and 16th of December excepted) one pound eight ounces of flour, four pints of water, twelve drachms of salt, sometimes with oil, of different kinds as marked in the Table, sometimes without.

From the 5th to the 23d of December inclusive, the food was taken in equal portions, at two different times in the day; but both before and after this period, it was taken at three times. The quantity used at breakfast and dinner was nearly equal, and double what was used at night.

As the body was weighed every hour during the day, the waste, or loss of weight which it sustained, from the insensible perspiration and urine, was every hour exactly ascertained; and the quantity of nocturnal perspiration was, in like manner, established, by weighing the body at going to bed, and immediately after rising in the morning: and, by weighing it again directly after making water, the quantity or weight of the nocturnal urine was also known.

Z

EXPLANATION

EXPLANATION

Of the ABBREVIATIONS, employed in.

The following TABLE.

The Table is divided into columns, according to the day of the month. On one side are marked the hours after each meal, and directly opposite to them, the quantity of perspiration, or of perspiration and urine evacuated in each hour.

When two figures are joined by a crotchet, the opposite number marks the loss of weight at the end of both hours.

The state of the atmosphere is marked by the letters f. c. r. f. m. (the initials of serene, cloudy, rainy, foggy, mixed,) placed immediately after the hour.

The letter w. placed immediately after a single hour, signifies that I walked moderately in the open air, during all or most of the time; but when placed opposite to a crotchet it only implies that I walked part of the time.

b. ch. means sitting in my bed-chamber.

ex. using moderate exercise in the house.

l. lying in bed.

sl. asleep in my chair by the fire.

n. sitting quite naked by the fire.

b. buttoned up in my great coat.

d. at the further end of my dining-room, near the doors.

Where there is no mark but what denotes the state of the atmosphere, it implies, that during that time I was at home, and nearly at rest.

S T A T I C A L T A B L E .

November 29.		November 30.		December 1.		December 2.	
6 oz. of fuet, made into a pudding, with flour.		6 oz. of fuet.		6 oz. fuet.		4 oz. of fuet.	
Breakfast.		After rising.		In bed 8 hours, in which time I perspired, 8 oz. 12 dr.		In 8 hours nocturnal perspiration, 10 oz. 1 dr.	
Hour	Perspiration oz. dr.	Hour	Perspiration oz. dr.	After rising,		After rising.	
1		1	2 10	Hour		Hour	
2	2 1	2	1 13				
3	1 15	Breakfast.		oz. dr.		oz. dr.	
4 } w.	4 9	1	3 2	1 f.	2 8	1 c.	2 11
5		2 } w.	5 6	2 f.	1 13	2 c.	2 5
Dinner.		3		Breakfast.		Breakfast.	
1	2 7			1 f.	1 13	1 m.	2 2
2	1 15	Dinner.		2 m.	2 0	2 f. w.	1 6
3	1 12	1	2 9	3 f.	1 13	3 f.	3 2
4	1 14	2	1 14	4 f.	1 11	4 f.	1 13
5	1 8	3 w.	0 11	Dinner.		Dinner.	
9	lb. 1 2 1	4	2 7	1 f.w.	2 7	1 f.	1 13
		Supper.		2 f.	2 8	2 f. w.	1 14
		1	1 12	3 f.	2 3	3 f.	2 10
		2	3 2	4 f.	2 7	4 f.	2 1
		3	1 10	Supper.		Supper.	
		4	1 2	1 f.	1 2	1 f.	1 8
		lb. 1 11 14		2 f.	1 12	2 f.	1 10
				3 f.	1 6	3 f.	1 5
				lb. 1 9 7		lb. 1 12 0	
				13		14	

December 3.	4.	5.	6.
No Food*.	4 oz. of fuet.	4 oz. of fuet.	4 oz. of fuet.
In 9 hours nocturnal perspiration, 10 oz. 4 dr.	In 8 hours, 30 minutes, nocturnal perspiration, 8 oz. 6 dr.	In 8 hours, 30 minutes, nocturnal perspiration, 8 oz. 14 dr.	In 8 hours, 15 minutes, nocturnal perspiration, 9 oz. 0 dr.
After rising.	After rising.	After rising.	After rising.
Hour Perspiration oz. dr.	Hour Perspiration oz. dr.	Hour Perspiration oz. dr.	Hour Perspiration oz. dr.
1 not observed	1 f. 2 15	1 c. 3 2	1 c. 3 2
2 c. 3 4		2 c. 2 3	2 c. 2 5
3 c. 1 13	Breakfast.	3 c. 2 1	
4 c. l. 0 10	1 c. 1 14	4 c. 1 15	Breakfast.
5 c. 2 5	2 c. 1 12	5 c. 0 13	1 c. w. 3 6
6 c. l. 0 4	3 c. w. 1 11	6 c. 1 5	2 c. 2 7
7 c. 2 0	4 c. 2 11	Breakfast,	3 c. w. 3 3
8 c. l. 0 10	5 c. 2 2	1 r. w. 3 5	4 c. 2 12
9 c. 2 1		2 r. 2 5	Dinner.
10 c. l. 0 9	Dinner.	3 r. w. 1 6	1 c. 3 6
11 c. n. 1 11	1 c. 1 8	4 r. 2 8	2 c. 3 5
12 c. 1 6	2 c. w. 1 1	Dinner.	3 c. 1 13
13 c. n. 1 6	3 c. 2 5	1 c. 1 10	4 c. 2 1
14 c. 1 2	4 c. 1 15	2 c. 1 13	5 } c. w*.
13 lb. 1 3 1	Supper.	3 c. 1 9	6 }
	1 c. 1 5	4 c. 1 3	7 }
	2 c. 1 7		
	3 c. 1 9	14 lb. 1 10 14	13 lb. 1 14 6
	13 lb. 1 9 11		

* I was induced to try the effect of long fasting, partly with a view to diminish the quantity of urine secreted in the night, which, from its copiousness, I found difficult to retain till the morning. From the 5th to the 8th hour after rising, I was very hungry, I then lost my appetite, became faint, weak, peevish, and, lastly, fell asleep.

During 8 hours of the day, viz. from the 3d to the 11th, I alternately sat by the fire in my dining-room, or in my bed-chamber, where there was no fire. During the last four hours, I alternately sat naked, or with my clothes on in the same place by the fire.

† On the 6th day, after dinner, I walked only in the beginning of the 5th hour, and towards the end of the 7th.

December

December 7.	8†.	9‡.	10.
4 oz. of suet.	4 oz. of suet.	No oil.	No oil.
In 8 hours nocturnal perspiration, 7 oz. 13 dr.	In 8 hours, 45 minutes nocturnal perspiration, 8 oz. 10 dr.	In 6 hours 15 minutes, nocturnal perspiration, 6 oz. 4 dr.	Nocturnal perspiration not observed.
After rising.	After rising.	After rising.	After rising.
Hour Perspiration oz. dr.	Hours Perspiration oz. dr.	Hour Perspiration oz. dr.	Hour Perspiration oz. dr.
1 c 3 1	1 f 2 11	1 f l 1 2	1 f l 1 1
2 m 1 12	2 f 2	2 f 3 10	2 f 2 3
3 m 2 9	3 f 1 12	3 f w 2 6	3 m 1 7
Breakfast.	Breakfast.		Breakfast.
1 f w 3 6	1 f 3 2	4 f 2 3	1 c ex 3 0
2 f 3 2	2 f w 2 6	5 f w 1 7	2 c 2 2
3 f w 1 12	3 f 2 8	6 f 2 13	3 r ex 2 7
4 f * 3 2	4 f w 1 8	Breakfast.	4 r 1 12
Dinner.	5 f 3 6	1 f 2 3	5 r ex 2 5
2 } f w 5 8	Dinner.	2 f 1 12	6 11 2
1 } f w 2 9	1 f b ch 1 5	3 f 2 1	Dinner.
3 f 2 5	2 f 2 15	Dinner.	1 f d 1 10
4 f 1 14	3 f b ch 0 12	1 f d 2 0	2 f 1 2
5 1 14	4 f 2 15	3 f d 2 4	4 f 0 14
12 lb. 1 15 0	5 f b ch 0 12	5 f d 2 3	5 1 9
	6 2 4	6 f 2 3	14 lb. 1 9 5
	14 lb. 1 13 11	15 lb. 1 13 10	

* The unusual encrease in the quantity of the perspiration, during the hour immediately preceding dinner on this and the following day, was, I believe, owing to my having fat nearer the fire than I commonly do.

† This day, after dinner, I alternately fat in my bed-room, where there was no fire, or in my dining-room, where there was one.

‡ On the 9th and 10th, after getting up and weighing, I went to bed again, and lay for an hour without going to sleep. On the 9th, I, for 6 hours after dinner, alternately fat near the door of my dining-room, at a considerable distance from the fire, or at a moderate distance from it; and on the 10th, for 6 hours after breakfast, I alternately used moderate exercise, or fat still in my room.

December

December 11*.	12.	13.	14.
No oil.	No oil.	No oil.	4 oz. of suet.
Nocturnal perspiration not observed.	In 7 hours, 20 minutes nocturnal perspiration, 7 oz. 5 dr.	In 7 hours, 15 minutes nocturnal perspiration, 6 oz. 15 dr. Urine collected in the night, 1 lb. 3 oz. 7 dr.	In 8 hours nocturnal perspiration, 7 oz. 8 dr. Nocturnal urine, 1 lb. 9 oz. 12 dr.
After rising.	After rising.		
Hour Perspiration oz. dr.	Hour Perspiration oz. dr.	After rising. Hour Persp. Ur. oz. dr.	After rising. Hour Persp. Ur. oz. dr.
1 c 2 12	1 f 2 8	1 f l 1 6	1 c 2 9
2 c 2 0	2 f 2 9	2 c 3 3	5 8
Breakfast.	Breakfast.	Breakfast.	Breakfast.
1 c 2 3	1 f w 2 4	1 c 2 4	1 r 2 5
2 c 2 1	2 f 3 10	2 c 1 9	2 r 2 4
3 c 2 1	3 f w 1 7	3 f 2 4	3 r 2 7
4 c 1 13	4 f 2 8	4 f 1 3	4 r 1 6
	5 f w 1 11	5 f r w 2 2	5 c 1 4
Dinner.	Dinner.	6 f 1 14	6 m 1 12
1 c w 2 5	Perfp. Urine .	Dinner.	Dinner.
2 c 2 7	1 f 2 2	1 f r w 1 6	1 m w 2 0
3 c w 2 7	2 2 0	2 c 1 14	2 c 1 15
4 c 2 1	3 1 11	3 m 1 12	3 m w 1 12
5 r w 1 5	4 1 11	4 } m w 4 11	4 1 15
6 c 2 4	5 1 6	5 } m w 4 11	5 1 15
7 r w 1 8	6 1 8	6 } m w 4 11	6 1 12
8 r 1 14	7 1 5		7 1 10
14 lb. 1 13 1	14 lb. 1 12 4	14 lb. 1 9 8	14 lb. 1 10 4
	In 7 hours urine, lb. 1 0 1	2 6 14	1 7 10

* During the 5th hour after dinner, I walked without my great coat; the rest of the time, whilst walking, I had it on.

|| The quantity or weight of the urine secreted each hour, was determined by weighing the body immediately before and after making water.

December

December 15.	16.	17.	18.
4 oz. of fresh butter.	The food of this day mentioned below.	4 oz. of fresh butter.	4 oz. of fresh butter.
In 7 hours 45 minutes nocturnal perspiration, 7 oz. 9 dr. Nocturnal urine, 1 lb. 7 oz. 11 dr.	In 7 hours nocturnal perspiration, 6 oz. 12 dr. Nocturnal urine, 1 lb. 1 oz. 7 dr.	In 7 hours nocturnal perspiration, 6 oz. 11 dr. Nocturnal urine, 1 lb. 6 oz. 4 dr.	In 8 hours, 30 minutes nocturnal perspiration, 8 oz. 3 dr. Nocturnal urine, 1 lb. 11 oz. 7 dr.
After rising. Hour Persp. Ur. oz. dr. 1 c 2 11 2 8 2 c 2 1 1 15 Breakfast. 1 c 1 12 0 13 2 c 1 11 1 1 3 c 1 15 1 7 4 m 1 15 1 12 5 c 1 9 1 7 6 c 1 14 1 12 Dinner. 1 c w 1 15 1 13 2 1 7 1 0 3 2 1 2 0 4 m w 1 4 2 2 12 lb. 1 6 3 3 11 1	After rising. Hour Persp. Ur. oz. dr. 1 c 2 6 2 8 2 c 2 1 1 6 Breakfast. Suet, yolks of eggs, of each 2 oz. water, 2 pints 1 m 1 11 8 5 2 f 1 10 2 9 3 f 1 10 2 11 4 m 0 12 1 14 5 m 1 0 1 10 Dinner. Figs, 1 lb. Water, 2 pints. 1 m 2 12 2 1 2 f 1 15 2 6 3 f w 2 2 * 2 4 4 f 1 14 2 0 5 1 14 3 6 6 1 9 6 13 13 lb. 1 7 4 2 7 13	After rising. Hour Persp. Ur. oz. dr. 1 f 1 3 1 2 2 c 2 13 1 2 Breakfast. 1 f 1 3 0 3 2 f 1 8 0 11 3 f 1 14 1 5 4 2 8 1 1 5 f w 3 1 1 15 Dinner. 1 } fl 3 10 2 1 2 } 1 8 0 10 3 2 5 1 7 4 f w 1 13 1 14 5 1 4 1 11 6 1 11 13 lb. 1 9 1 0 15 2	After rising. Hour Persp. Ur. oz. dr. 1 c 3 8 .6 8 Breakfast. 1 c 1 7 0 13 1 } c 3 5 1 12 3 } 2 9 1 10 4 r 2 7 2 9 Dinner. 1 c w 1 12 2 4 2 1 12 1 12 3 1 9 0 15 4 e w 1 10 0 14 5 1 12 1 1 6 1 5 0 14 7 1 7 2 0 13 lb. 1 8 7 1 6 10

*On the 15th I had two loose stools, and one on the 16th, immediately after breakfast.

December

December 19.	20.	21.	22.
4 oz. of fresh butter.	4 oz. of fresh butter.	4 oz. of oil of marrow.	4 oz. of oil of marrow.
In 7 hours 15 minutes nocturnal perspiration, 7 oz. 8 dr. Nocturnal urine, 1 lb. 2 oz.	In 8 hours, 30 minutes nocturnal perspiration, 8 oz. 3 dr. Nocturnal urine, 1 lb. 2 oz. 7 dr.	In 8 hours 10 minutes nocturnal perspiration, 8 oz. Nocturnal urine, 1 lb. 8 oz. 14 dr.	In 8 hours, 15 minutes nocturnal perspiration, 8 oz. 5 dr. Nocturnal urine, 1 lb. 6 oz. 8 dr.
After rising. Hour Persp. Ur. oz. dr.	After rising. Hour Persp. Ur. oz. dr.	After rising. Hour Persp. Ur. oz. dr.	After rising. Hour Persp. Ur. oz. dr.
1 f 2 8 2 7	1 c 3 5 2 5	1 c 3 3 2 6	1 f 2 4 2 0
Breakfast.	Breakfast.	Breakfast.	Breakfast.
1 f 2 1 1 3	1 } c 3 10 0 15	1 } c 4 14 2 6	1 f 1 11 1 1
2 1 11 0 15	2 } c 1 8 1 13	2 } c 1 10 1 8	2 f 1 12 0 15
3 c 1 13 1 0	3 m 1 8 1 13	3 r w 1 10 1 8	3 f 1 5 1 1
4 c 1 13 1 0	4 m w 3 3 2 2	4 c 2 6 1 4	4 f 1 9 1 2
5 m w 3 4 2 8	5 m 1 14 2 2	5 c 2 1 1 6	5 f 1 7 1 6
6 m 2 4 2 3	6 1 14 2 1		6 6
Dinner.	Dinner.	Dinner.	
1 1 12 1 0	1 1 11 1 5	1 c w 2 8 1 8	7 f w 2 5 2 14
2 1 6 1 0	2 1 8 1 12	2 2 6 1 4	8 2 4 1 14
3 c w 1 6 1 0	3 } f w 6 7 6 1	3 1 13 1 12	9 2 3 1 6
4 1 14 0 14	4 } f w 6 7 6 1	4 f w 2 1 1 8	10 f w 0 10 1 9
5 1 7 1 0	5 } f w 6 7 6 1	5 1 8 1 5	11 1 12 0 11
6 1 8 1 1		6 1 8 1 14	Supper.
		7 1 7 2 0	1 1 14 0 12
13 lb. 1 8 11 1 1 4	12 lb. 1 9 0 4 11	13 lb. 1 9 8 1 4 1	2 1 7 0 10
			13 lb. 1 7 7 1 5

*I had two loose stools on the 19th;

December 23.				24.				25.				26.			
6 oz. of oil of marrow.				6 oz. of oil of marrow.				6 oz. of oil of marrow							
In 8 hours nocturnal perspiration, 8 oz. 9 dr. Nocturnal urine, 14 oz. 11 dr.				In 8 hours, 30 minutes nocturnal perspiration, 10 oz. 0 dr. Nocturnal urine, 15 oz. 12 dr.				In 8 hours nocturnal perspiration, 9 oz. 4 dr. Nocturnal urine, 1 lb. 9 oz. 10 dr.				In 7 hours, 30 minutes nocturnal perspiration, 8 oz. 2 dr. Nocturnal urine, 1 lb. 5 oz. 8 dr.			
After rising.				After rising.				After rising.				After rising.			
Hour	Persp.	Ur.		Hour	Persp.	Ur.		Hour	Persp.	Ur.		Hour	Persp.	Ur.	
	oz. dr.	oz. dr.			oz. dr.	oz. dr.			oz. dr.	oz. dr.			oz. dr.	oz. dr.	
1 r	3 2	1 10		1 f	3 13	1 8		1 r	2 15	2 3		1 c*	2 14	2 12	
Breakfast.				Breakfast.				Breakfast.							
1 r	1 11	0 14		1 f	2 2	1 8		1 r	1 15	1 11					
2 c	0 15	0 12		2 f	1 11	1 6		2 r	1 9	1 6					
3 m	1 10	0 15		3 f	1 11	1 3		3 r	1 13	1 3					
4 f	2 10	1 14		4 m w	2 8	2 8		4 c	1 7	1 10					
5 m w	2 1	2 13		5 f w	2 11	3 12		5 c	1 5	1 7					
6 m	2 1	2 8		Dinner.				Dinner.							
7 f w	2 0	2 14		1 b	1 10	1 8		1 c w	2 3	2 4					
8	2 0	2 4		2	1 9	2 0		2 r w	2 12	2 0					
9	1 0	1 8		3 b	1 8	1 8		3 c w	2 8	1 8					
10 m w	1 4	1 5		4	1 10	1 12		4	2 7	1 10					
11 fl	1 15	0 13		5 f w	2 8	2 8		Supper.							
Supper.				6	1 13	2 12		1 fl	1 13	1 2					
1	1 11	0 11						2 }	2 12	1 14					
2	1 3	0 13						3 }							
14 lb. 1 9 3	1 5 10			12 lb. 1 9 12	1 7 13			13 lb. 1 10 14	1 3 14						

* Having this day been very much indisposed, I was obliged, at present, to discontinue my observations.

By adding together the particular numbers contained in this Table it appears,

That in 355 hours, during the day-time, the perspiration was, 698 oz. 7 dr. And
That in 190 hours 15 minutes, during the night-time, it was, 196 oz. 14 dr.

And by adding together the particular numbers, in that part of the Table subsequent to the 12th of December it appears,

That in 169 hours, during the day-time, the perspiration was, 324 oz. 2 dr. } 624 7/8
The urine was, 300 oz. 6 dr. }
That in 109 hours 40 minutes, during the night, the perspiration was, 111 oz. 9 dr. } 628 1/2
The urine was, 297 oz. 6 dr. }

And hence, by a short calculation it will be found, that the hourly waste of my body was nearly equal, both day and night, being about 3 oz. 10 or 11 dr.

The influence of the food upon the perspiration and urine may, in some measure, (though I own imperfectly) be judged of, from the following Table.

Hours Min. 40 48 169
109 40 : 408 : 169
60
6585

87120
405600 169 48 18
41321 20 1628 13
39480 15 17
18912 168
13160 129
57520
62640
4880
335600 10
300400 5
329000
61200

Diet

Diet.	Day*.	Perspiration.		Urine.		Night†.	Perspiration.		Urine.	
	Hours.	oz.	dr.	oz.	dr.	Hours. Min.	oz.	dr.	oz.	dr.
No food	13	19	1	—	—	8 13	8	6	—	—
No flour	13	23	4	39	13	7	6	11	22	4
No oil	71	137	12	—	—	22 35	21	12	—	—
No oil	21	—	—	50	15	15 15	—	—	45	3
4 oz. marrow	26	48	—	37	6	16 15	16	14	37	3
4 oz. butter	63	121	6	95	6	39 25	38	10	106	3
4 oz. fuet	80	160	14	—	—	47 30	48	2	—	—
4 oz. fuet	14	—	—	23	10	7 45	—	—	23	11
6 oz. marrow	39	77	13	65	5	24	27	6	4	14
6 oz. fuet	49	99	6	—	—	25	29	1	—	—

* That is, whilst out of bed.

† That is, whilst in bed.

A CONTINUATION of the STATICAL TABLE.

February 5.			6.			7.			8.		
Heated honey, 8 oz.			Honey, 8 oz.			Heated honey, 12 oz.			Honey, 6 oz.		
Breakfast.			Dinner.			Breakfast.			Breakfast.		
Hour after.	Perfp. oz. dr.	Ur. oz. dr.	Hour after.	Perfp. oz. dr.	Ur. oz. dr.	Hour after.	Perfp. oz. dr.	Ur. oz. dr.	Hour after.	Perfp. oz. dr.	Ur. oz. dr.
1 } f w*			1 f	2 3	1 10	2 f	3 0	2 10	1 f	2 6	1 3
2 } m	5 12	10 9	2 f	2 4	1 8	3 f	2 5	5 9	2 f	2 0	1 1
3 m f	3 0	7 10	3 } w			4 f	2 0	7 8	3 f	1 15	1 0
4 m f	2 8	5 6	4 }						4 f	1 15	0 15
Dinner.			Supper.			Dinner.			Dinner.		
1 c f	1 14	7 6	1 w	2 0	1 14	1 f	2 0	7 10	1 }		
2 c w	2 0	10 10	2 f	2 1	1 9	2 }	w† 6 0	1 0 4	2 }	w† 10 14	4 15
3 c f	2 12	5 4	3 f	1 9	1 6	3 }			3 }		
									4 }		
									Supper.		
									1 }	f 3 14	2 0
									2 }		

* Walked all the time till in a breathing sweat.

† Walked briskly all the time in a cold wind.

‡ Walked about half the time.

February

N.B. It should be remarked that the perspiration, during the night-time, and in the morning, before breakfast, is influenced by the food taken the preceding day, and therefore, strictly speaking, belongs to it, though their place in the Table must, necessarily, stand as it does.

Several other remarks might be made on the Table, but they will probably occur to the reader himself from the perusal of it. I shall therefore only add, that although I have been extremely careful to avoid mistakes, yet I am ready to confess, that wherever any uncommon encrease or decrease in the weight of the body is observed, it is more probable that I should have been mistaken, than that any thing uncommon should have happened. I have likewise to beg of the Reader to remember, that these Observations were made, not so much in hopes of determining any thing on this subject, as of discovering how the land lay, and of enabling me to undertake some more accurate and decisive Experiments.

Time	Weight	Height	Temperature	Pulse	Respiration	Sweat	Stool	Urine
12.00	150	5.5	98.0	72	16	0	0	0
1.00	150	5.5	98.0	72	16	0	0	0
2.00	150	5.5	98.0	72	16	0	0	0
3.00	150	5.5	98.0	72	16	0	0	0
4.00	150	5.5	98.0	72	16	0	0	0
5.00	150	5.5	98.0	72	16	0	0	0
6.00	150	5.5	98.0	72	16	0	0	0
7.00	150	5.5	98.0	72	16	0	0	0
8.00	150	5.5	98.0	72	16	0	0	0
9.00	150	5.5	98.0	72	16	0	0	0
10.00	150	5.5	98.0	72	16	0	0	0
11.00	150	5.5	98.0	72	16	0	0	0
12.00	150	5.5	98.0	72	16	0	0	0

A N
A C C O U N T

O F

DR. STARK'S last ILLNESS and DEATH,

B Y

Sir JOHN PRINGLE, or by Dr. SAUNDERS, most probably
the former*.

*Quis talia fando———
temperet a lacrymis?*

DR. STARK died in the twenty-ninth year of his age. He was of a fair complexion, tall, of a thin make, and healthful. For several months before his death he had been employed in making experiments upon himself, of the effects of different kinds of food; among the last was that of honey and flour made into a pudding, upon which he had lived several days; and which seemed
to

* For this account I am indebted to Dr. Garthshore, who transcribed it some years ago from the original copy, in the possession of Dr. Huck Saunders.

to be extremely diuretic at first*, as he made considerably more water than the liquor he drank. At last it brought on a diarrhoea, for which he ate Cheshire cheese, to the quantity of a quarter of a pound, without any other food, and that seemed to bind his body so much that he had not been at stool for five days†. When he was taken ill, on Sunday, the 18th of February, 1770, he sent for Mr. Hewson to bleed him, when he complained of his head and in his belly, The blood was somewhat fizy. He had used some opening medicines without effect, until the 20th, that he took the Ol. Ricini, which procured five or six motions. On the morning of the 20th, he complained of an oppression and sickness at his stomach, and he had spit some blood in the night; his pulse was very quick, and he had other feverish symptoms. He had no sleep for two nights, nor did he shut his eyes afterwards. Ordered tartar. emetic. gr. v. sal. rupell. ʒ ss to be dissolved in a pint and a half of water, and of this, a coffee-cup full every ten minutes, till it had a sensible operation. This was directed, upon the supposition that he had some load in his stomach and bowels, which was to be relieved by vomiting and purging. He took three cupfulls, in all, of the medicine, vomited thrice, and had seven loose stools, but complained of great sickness

* The diuresis he ascribed to the boiling of honey, not having observed that quality of it when used in its natural state.

† That he had eaten nothing but Cheshire Cheese is not certain, it was at least two days, one of the Gentlemen who attended him thinks more.

It appears from Dr. Stark's own Journal, that the two preceding remarks are not perfectly correct.

sickness and lowness after them. The next day, (21st) he was extremely low, had the anxietas præcordiorum in a great degree, restlessness, flushings in his cheeks, and complained much of a great flow of sweet saliva in his mouth, which made him sick. The looseness still continued. The following mixture was directed, ℞ julep. e creta. ʒ vii ℥, tinct. cinnamon. ʒ ℥, tinct. thebaic. gutt. x. m dentur coch. iv. post alternas sedes liquidas. Of this he took one dose, and had no stool after it. At this time he seemed much worse, he spoke slow and low, and seemed with difficulty to recollect, or pronounce the word he wanted to utter.

During the night he was very feverish, and so delirious as to attempt getting out of bed. The purging returned, and the stools were bloody and involuntary. He sometimes coughed and brought up some mucus, tinged with blood. A blister, which had been applied the night before, rose well, but without any other effect. A decoction of the bark and camomile-flowers, with some Portwine, was thrice injected as a clyster, which stopped his purging. He continued to grow worse, and died on Friday, the 23d.

Here follows Mr. Hewson's Account of the Illness and Inspection of the Body; which is added, as he was more with the Patient than any of the Physicians who attended him.

On Sunday, the 18th of February, Dr. Stark sent to desire me to bleed him; I went at nine, and found him going to take

B b

a clyster.

a clyster. He told me he had pain in the lower part of his belly, that he had not made water in any quantity, nor had had a stool for three or four days; this he attributed to a change in his diet, viz. from a pudding, made of honey and flour, to cheese, of which I understood he had eaten to the quantity of three or four pounds, without having had any evacuation since he began it, and this, he told me was the opposite effect to that of honey, for, whilst living on the pudding of flour and honey, he had made more urine than he had drank water, which was all his drink. Agreeable to his desire I took away nine ounces of blood, which was received into four cups; the two first had an inflammatory crust. The blood, at five o'clock, P. M. had very little serum, which I ascribed to its having stood in a cool place, as the coagulum felt very firm, and as one cup, which was removed into a warm room, had more serum separated the day following. Soon after the bleeding he took half an ounce of castor oil. In the afternoon he thought himself rather better, having made water, and discharged some fæces, which he told me were extremely offensive. Upon enquiring whether he had been sensible of any enlargement of his bladder, he answered in the negative, and observed that obstructions there had not been total, for that he had frequently made a spoonful of water, and could, at any time, discharge a small quantity. He drank, during the day, plentifully of water-gruel, with a little juice of orange in it.

On Wednesday morning, I found that he had been very restless, hot, feverish and thirsty, throughout the preceding night. He said that he had spit blood, and complained of a pain in his head. His face was remarkably florid, he seemed much oppressed, and fetched his breath every now and then with a moan. His
skin

His skin was very hot, his pulse seemed to require another bleeding, which he desired me to perform, but hearing that he had sent for a Physician, another medical friend, I desired he would defer the operation till after his visit. I returned at twelve, and understood that he had been desired to repeat his castor oil, but not to bleed. Upon examining his pulse, I was surprized to find it so much altered in so short a time, for it was remarkably soft, and it was upon this change it was thought improper to open a vein. I saw him again at five o'clock in the afternoon, and found him much oppressed; he moaned frequently, said his stomach loathed every kind of watery liquor, complained of a violent pain in his forehead, was very low-spirited, and told me he apprehended he should not outlive the night. That evening he was directed to use the following medicine, tart. emetic. gr. v. sal. rupell ʒ ʒ dissolved in a pint and half of water, of this he took, at intervals, about a third part by cupfulls, till it operated. I saw him about an hour afterwards, and he thought himself much relieved, though nothing had come up from his stomach, but the water he had drank and a little mucus.

On Wednesday I found him very low, and constantly spitting. He told me his saliva was sweet, and supposed that his purging was owing to his swallowing it in his sleep, for that when he spit it out he seemed to purge less. The pain in his belly, he said, seemed not so low down as it had been, but added, that the pain of his head was intolerable. He took, during the day, some chalk julep, with two or three drops of laudanum, after every stool. In the evening he told me he was afraid to go to sleep, lest he should swallow his saliva.

On Thursday-morning I understood he had been delirious in the night, and had got out of bed in spite of his nurse, but had immediately tumbled down on the floor. When I saw him he muttered his words so that I could not understand him, but seemed sensible of what I said to him, and gave me his hand to feel his pulse. At two in the afternoon I found him evidently worse, for he was then insensible, and his stools were frequent and involuntary, and, as the nurse expressed it, nothing but discoloured water. He was blistered, took glysters of a decoction of the bark, and used the *julepum vitæ* of Bates for a cordial, but from this time he grew worse and worse, and died next day at four in the afternoon.

The body was examined by Mr. Hunter and myself, on Sunday, at one o'clock. Upon opening the abdomen two or three ounces of water were found in the pelvis. The bladder contained about six ounces of urine, of a natural colour. The small intestines appeared very red and inflamed at particular parts, which, upon opening into their cavities, was found to be the *glandulæ peyerianæ* enlarged. One cluster of these seemed ulcerated. Some of the *glandulæ solariæ* were of the size of a split pea. The mesenteric glands were likewise enlarged, and, when cut into, were found to be remarkably soft and tender. The stomach, near its upper orifice, internally, had the vessels of its villous coat tinged with blood which burst* on a very slight pressure. The liver seemed rather small. The spleen rather larger than common, but had no morbid appearance. The kidneys had their veins fuller of blood than usual, but the ureters and pelvis were of a natural size.

* The expression is *broke down*, in the original.

size. The larger intestines seemed quite sound. In the thorax there was found more water than even in people who die a violent death, even after lying two days before dissection. The same was observed of the pericardium. The lungs had several black spots in different parts of their substance, owing to extravasated blood. The heart seemed flaccid, and had no coagulum in it, the blood being fluid; however, one or two transparent coagula were afterwards found in the vessels of the brain, but they were very soft.

The dura mater had no morbid appearance; but the vessels of the pia mater had more moisture in the cellular membrane, contiguous to them, than is natural. The ventricles contained each about a tea-spoonfull of water, and that in the left was of a bright yellow colour. The pineal gland had several earthy particles in it. The other parts of the brain had no preternatural appearance.

This was Mr. HEWSON's written Account of the Dissection.

Mr. HUNTER gave the Physician the following Account of the Appearance some days afterwards, from his Memory.

The brain had no morbid appearance, except that in the left ventricle; the serum, which was not more than usual in quantity, had a slight bloody cast. The substance of the brain was of a natural

natural firmness. In the thorax the lungs had a slight adhesion to one side, and there were maculæ, some of them as broad as a shilling, all over the surface of that organ; owing to an extravasation of blood in the cellular membrane, and under the common membrane of the lungs. In the substance of the lungs the cellular membrane contained a good deal of extravasated blood. In the cavity of the thorax there was more than the natural quantity of serum. The heart was found, but upon opening it and the great blood-vessels; the blood was found in a resolved state, that is, about the consistence of syrup without any polypus concretion or coagulation. The liver was found. The gall-bladder was half full of bile, and of a natural colour. Nothing extraordinary was contained in the stomach and intestines. There were no marks of inflammation on the stomach, but there were on the intestines, especially towards the lower end of the ileum, where the peyerian glands were found enlarged beyond their natural size, in so much that they could be felt with the fingers on the outside of the gut. There was no extravasated blood in any part of the tube.

Mr. Hunter took notice in this subject, of the beginning dissolution of the internal coats, near the great end of the stomach, but which he accounted no morbid appearance, as it had been observed on other occasions.

After giving the above account Mr. Hunter added, that he had forgot to mention the diseased appearance he had observed in the mesenterick glands. They were larger than common, and when cut into were observed to be much paler than natural, and their substance to be so soft as to appear like a pulp.

F I N I S.

I N D E X.

A	Page
AIR Vesicles, State of -	28
Aneurism of the Pulmonary Artery, opening into a Vomica - -	31
Aorta, its Canal almost shut up by the Semilunar Valves - - -	19
Asthma—See difficult Breathing.	

B	Page
Bacon (Lord) the Distinction which he made between useful and curious Knowledge - - -	90
Bark, its Effect in a copious Discharge of putrid Saliva - - -	65
Blood, Extravasion of the red Part of this Fluid - - -	50
Blood-vessels, State of the large ones -	28
Brain, a Case in which there was no morbid Appearance in this Viscus, after an Apoplexy - M - -	73

C	Page
Cellular Substance, Blackness of -	4
State of -	28

Page	Page
Colon, Irruption of Matter collected near the right Hypochondrium into this Intestine - - -	8
Costiveness, the Symptoms that almost constantly attend it - - -	15
several of the Causes that occasion it - - -	ibid.
Cough, the different Kinds described -	38
without Expectoration; or with Expectoration of Mucus only -	ibid.
with Expectoration of thick Matter - - -	39
with Blood spit up in small Quantities - - -	40
with Blood flowing from the Mouth by Fits - - -	41

D	Page
Diet, general Observations on -	89
Facts relative to -	92
Remarks on; see the Course of Experiments the Author made on himself beginning at -	96
Difficult Breathing, its Symptoms -	43

C c

I N D E X.

	Page		Page
Difficult Breathing, an Instance of its being relieved, upon the Appearance of soft Tumors externally -	44	this Disease, what Remedies they seem to indicate -	16
----- a Case in which it was immediately relieved, by the spontaneous Discharge of Matter from the Side -	45	Ileum, Erosion of its Glands -	7
Digestion, Observations on -	94	Intestines, Inflammation of the smaller ones, with Effusion of Blood -	2
Dissection of morbid Bodies, the Advantages that may be derived from it -	85	----- Erosions of the internal and neighbouring Coats of the larger ones -	4
Dura Mater, Suppuration of Part of this Membrane -	70	----- the glandular Follicles of the great ones much enlarged, and filled with a glutinous Substance -	5
		----- numerous Constrictions of -	9

F

Fever, with red or purple Spots on the Skin -	62
Fluids, an uncommon Case of their Putrefaction -	53
Food, Experiments to determine how long it is usually retained in the Body -	97

G

Gall-duct, the common, shut up by a Gall-stone; and opening of the hepatic-duct into the Duodenum -	12
---	----

I

Jaundice, the Symptoms by which it is accompanied -	16
----- the spontaneous Vomiting and Purging which frequently intervene in	

L

Liver, Hardness of, with Thinness, Transparency, and Discoloration of the Bile -	10
----- Abscesses of -	11
----- Hydatides in -	11
----- whitish Granules, or Tubercles in -	12
Lungs, Ulceration of -	22
----- Symptoms of this Disease -	ibid.
----- Appearances on Dissection -	25
----- their Vesicles filled with extravasated Blood -	32
Lymph lodged between the Dura and Pia Mater -	68

M

Mercury, its Effect in an obstinate Swelling of the Limbs -	64
---	----

Morbid

I N D E X.

	Page		Page
Morbid Affection, Degrees of, in Diseases			
of the Lungs	29	Recovery, remarkable Instance of, from	
Motion, Loss of, together with that of		a violent Spitting of Blood	42
Feeling	77	Rectum, Stricture in	7
—— Loss of, with Relaxation of the		Remedies, Observations on their Effects	
Parts	79	in the Cure of Diseases of the Stomach	17
—— Loss of, with Contraction of the		—— Chest	47
Parts	80	—— a general Account of their Ef-	
—— Description of that which is con-		fects in the Cure of Diseases of the Flu-	
stant and involuntary	82	ids	64
Muscles, deep red Blotches and partial		—— Observations on their Effects	
Suppuration in several, in Consequence		in Diseases of the Head, &c.	84
of a Wound	74		

P

Palpitation, Fits of, Symptoms of a Case	
in which they terminated fatally; with	
Appearances on Dissection	19
Pericardium, Case of its Adhesion to the	
Heart	20
—— enlarged, containing eight	
Ounces of Blood, and adhering partially,	
by fatty Papillæ, to the Heart	21
Pia Mater, its Veins apparently enlarged	72
Pleura, Inflammation of, and Effusion of	
Blood in the intercostal Muscles	36
Pleurifies, Symptoms of	46
Pulmonary Consumption. See Lungs.	
Purging, the usual Symptoms which ac-	
company it	14
—— Cases of, divided into two Spe-	
cies, the slimy and gelatinous	ibid.
Putrefaction and Extravasation, united in	
the same Subject	55

S

Saliva, Experiment to determine the	
Quantity secreted within a certain Space	99
Serum, or thinner Part of the Blood, Ex-	
travasation of	49
—— coloured Extravasation of	51
Stomach, Cancer in	1
Surfaces, Suppuration of the contiguous	
ones of the Diaphragm and Liver	37
Swelling, with Fluctuation of the Belly	59
—— general external one, retain-	
taining the Impression of the Finger	60
—— general external one, with	
Swelling of the Belly	ibid.
—— a fluctuating one on the Loins	61

T

Thorax, in three Cases of Consumption	
found	

INDEX.

	Page
found on Dissection to be filled with	
Lymph	35
Trachea, Observations on	29
Tubercles in the cellular Substance of the Lungs, Description of them	26

V

Vomica, an Account of	27
Vomiting of Blood, mixed with the Food	

	Page
or Liquors of the Stomach, the usual	
Symptoms which accompany it	13

W

Weight of the Body, Observations made with a View to determine how far it is affected, both in the Day and Night, by the Discharges of Perspiration and Urine	168
---	-----

EXPLICATION

Pneumonia, Symptoms of	46
Pulmonary Contusion. See Lung.	
Purging, the usual symptoms which accompany it	14
Quins, Cases of, divided into two Species	
the dry and gelatinous	14
the moist and gelatinous	15

E X P L I C A T I O N OF THE F I G U R E S:

FIGURE I. PLATE I.

Represents a portion of the higher part of the colon, taken out of the body of the man, (Part I. Ch. I. § 3. p. 4.) and inverted.

- a. A broad erosion of the internal coat.
- b, &c. Smaller erosions of the same coat.
- c, &c. Small black spots shining through that coat.

FIGURE II. PLATE II.

Represents the internal surface of the rectum, and that of the adjoining part of the colon, taken out of the body of the woman, (Part I. Ch. I. § 4. p. 5.) and cut open.

- A B. The circulus albus, and the boundary between.
- C. The skin, and
- D. The internal coat.

Above the circle appear the *finus sursum cavi*, described by Haller (prim. lin. DCCXLII.)

A great portion of the lower part of the rectum, being quite sound, is folded up.

- a a. Hemispheres filled with a gelatinous substance.
- b, &c. Vesicles of the internal coat, out of which the gelatinous substance having been expressed, blown up with air, and having one, two or three openings, into some of which a hog's bristle is introduced.
- c. Openings of vesicles not blown up.
- d. Large irregular openings in the internal coat.
- e e. Black spots appearing through that coat.
- f. A warty excrescence.

FIGURE III. PLATE II.

Represents the internal surface of the middle portion of the colon, taken out of the same body, and cut open.

- A. The middle point of the large intestines;

B. The

EXPLICATION OF THE FIGURES.

- B. The superior extremity of this portion.
- C. The inferior extremity of the same.
- D. Two lymphatic glands.
- a a, &c. Irregular eminences of the internal surface, which, towards the upper extremity were placed in two parallel lines, between which was a very long livid depression.
- b b. Hemispheres filled with a gelatinous substance, each having a pellucid middle point, at which, in one of the hemispheres, a hog's bristle is made to pass a little way.
- c, &c. Vesicles, emptied of the gelatinous substance they had contained, blown up, having each two openings, through which a hog's bristle is made to pass.
- d. The orifices of vesicles not blown up.
- e, &c. Irregular erosions of the internal coat, and sometimes of the cellular substance.

FIGURE IV. PLATE II.

Represents the internal surface of a portion of the lower part of the rectum, taken out of the body of the man (Part I. Ch. 1. § 4. p. 5.)

In the middle part of the figure is represented a large hemisphere, which, before the portion of intestine had been put into spirits, was much fuller than it here appears to be, and it was in some degree transparent.

FIGURE V. PLATE I.

Represents the internal surface of the adjoining portions of the ileum and of the colon, taken out of the body of the woman (Part I. Ch. 1. § 4. p. 5.) and cut open:

- A. The Appendix vermiformis.
- A B: The lower portion of the ileum, on which appear numerous roundish eminences, becoming gradually smaller towards the higher part, where they almost disappear.
- A C: The higher portion of the colon.
- D. The valve of the colon cut open.
- a, &c. Large vesicles with one or more orifices.
- b. Two irregular openings in the internal coat, probably the bases of vesicles; one of them is a little raised up by a bristle.
- c. Two large erosions.

FIGURE

EXPLICATION OF THE FIGURES.

FIGURE VI. PLATE I.

Represents the internal surface of a small portion of the lower part of the colon, taken out of the body of a woman who had laboured under a bad purging for four months before her death. On it appear many very small hemispheres.

FIGURE VII. PLATE I.

Represents a portion of the lower part of the ileum, taken out of the body (Part. I. Ch. i. § 5, p. 7.) the glands eroded in three places.

FIGURE VIII PLATE I.

Represents the internal surface of a portion of the lower part of the ileum, taken out of the same body.

A B. A longitudinal eminence, formed by a small remaining portion of the mesenteric pushing up part of the intestine.

a, &c. Small holes in the valvular conniventes.

b, &c. Holes in the part of the internal coat, nearest the mesentery.

c. A portion of the internal coat, furrounding a hole, raised up by air blown into the cellular substance.

FIGURE IX. PLATE III.

Represents the semi-lunar valves of the aorta, convex towards the ventricle, and almost shutting up the passage, as they appeared on drawing aside the large portion of the tricuspidal valve.

A B C. The three femi-lunar valves.

D. The large portion of the tricuspidal valve drawn aside.

EF G. The internal surface of the left ventricle.

H. The septum cordis.

FIGURE X. PLATE III.

Represents the three semi-lunar valves, with the neighbouring parts of the left ventricle and of the aorta, laid fully open to view.

A. The cavity of the aorta.

b. The

EXPLICATION OF THE FIGURES.

- B. The orifice of the right coronary artery.
- C. The orifice of the left coronary artery.
- D E. The internal surface of the left ventricle.
- F. Part of the large portion of the tricuspidal valve.
- G H K. The semi-lunar valves standing at a distance from the surface of the aorta, and partly covered with fatty excrescences.
- H. One of the valves cut up to shew the increase in thickness, which is chiefly at the lower part, and appears better at
- L. A small portion of the valve k.

FIGURE XI. PLATE III.

Represents the external surface of a portion of the dura mater, taken from the upper and anterior part of that membrane, and out of the body of the woman. (Part IV. Ch. I. § 2. p. 70.)

- A B. A hollow formed by the upper side of the longitudinal sinus, sinking down between two eminences, occasioned by the two lower sides of that sinus being, after they had been cut asunder, drawn aside. Near that hollow, and on either side of it, is represented the uneven surface of a diseased portion of the dura mater; that surface was not white or shining, but of a dark ash colour, and moistened with pus; the boundaries of it were in some parts quite black.
- C D. Two portions of the external lamina of the dura mater raised up by blowing, into the form of blisters. In each appear several apertures, at which, on pressing the neighbouring parts, pus had issued. At an aperture in each blister, a bristle is made to enter, both of which, as air had before done, found a passage between two laminæ.
- E. A thin portion of the external lamina, pushed up by one of the bristles, which shines through it.
- F. The extremity of the other bristle, passing out at an opening, (through which both pus and air had passed) on the outside of one of the superior angles of the longitudinal sinus, which is here cut across. The bristle, as it passes along, is represented shining through several thin portions of the external lamina.

Neither matter, nor air, nor either of the bristles, found any passage through the internal lamina, which did not appear in one part thinner than in another, or into the longitudinal sinus.

A CATAL.

Fig. 1.



Fig. 7.



Fig. 6.



Fig. 5.



Fig. 8.



Fig. 3.



Fig. 2.



Fig. 9.



Fig. 10.



Fig. 11.



Pub. Nov. 1. 1787. by J. Johnson, St. Pauls Church Yard.

Ravenhill Sculp.

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